



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

NOV 20 2015

OFFICE OF
AIR AND RADIATION

Mr. Gary Hebener
President and Chief Executive Officer
Montana Advanced Biofuels, LLC
114 Third Street South
Great Falls, Montana 59401

Dear Mr. Hebener:

You petitioned the Agency on behalf of Montana Advanced Biofuels, LLC (“MAB”) to approve a pathway for the generation of advanced biofuel Renewable Identification Numbers (RINs) under the Renewable Fuel Standard (RFS) program. Based on our evaluation, ethanol produced from barley starch at your dry mill production facility to be constructed in Great Falls, Montana may qualify for renewable fuel (D-code 6) RINs if only natural gas and grid electricity are used for process energy (the “Renewable MAB Barley Process”). MAB’s barley starch ethanol may also qualify for advanced biofuel (D-code 5) RINs if no more than a certain amount of natural gas and grid electricity are used per gallon of ethanol produced (the “Advanced MAB Barley Process”).¹

Through the petition process described under 40 CFR 80.1416, MAB submitted data to the U.S. Environmental Protection Agency to perform a lifecycle greenhouse gas (GHG) emissions analysis of the fuel produced through its dry mill process. This analysis involved a straightforward application of the same methodology and much of the same modeling used for previous RFS rulemakings, including the notice of data availability published on July 23, 2013 (78 FR 44075) (the “Barley NODA”).


The attached document “Montana Advanced Biofuels, LLC Request for Fuel Pathway Determination under the RFS Program” describes the data submitted by MAB, the analysis conducted by the EPA, and our determination of the lifecycle GHG emissions associated with the fuel production pathways described in the MAB petition. It also includes full definitions of the Renewable MAB Barley Process and the Advanced MAB Barley Process evaluated by the EPA, summaries and responses to the major comments on the Barley NODA, and a separate memorandum (attached) with more extensive discussion of the comments received.

This approval applies specifically to the MAB Great Falls, Montana facility, and to the processes, materials used, fuel produced, and process energy sources outlined and described in the MAB petition request.

¹ To qualify for RINs, the fuel produced through these pathways must meet the conditions and associated regulatory provisions discussed in the attached document and the other definitional criteria for renewable fuel specified in the Clean Air Act and EPA implementing regulations.

The OTAQ Reg: Fuels Programs Registration and OTAQEMTS: OTAQ EMTS Application will be modified to allow MAB to register and generate RINs for ethanol produced using the “Renewable MAB Barley Process” and ethanol produced using the “Advanced MAB Barley Process.”

Sincerely,

A handwritten signature in black ink, appearing to read 'C. Grundler', with a long horizontal flourish extending to the right.

Christopher Grundler, Director
Office of Transportation and Air Quality

Enclosure

Montana Advanced Biofuels, LLC Request for Fuel Pathway Determination under the RFS
Program
Office of Transportation and Air Quality

Summary: Montana Advanced Biofuels, LLC (MAB) petitioned the Environmental Protection Agency (EPA) under the Renewable Fuel Standard (RFS) program to approve the generation of advanced biofuel (D-code 5) Renewable Identification Numbers (RINs) for ethanol produced from barley starch. The company intends to produce ethanol from barley through a dry mill process at their production facility to be constructed in Great Falls, Montana. The EPA is issuing this determination in response.

In a notice of data availability (NODA) published on July 23, 2013 (78 FR 44075) (the “Barley NODA”), EPA presented data describing the lifecycle greenhouse gas (GHG) emissions associated with ethanol produced from barley starch using dry mill processes. The Barley NODA included an analysis which showed ethanol produced from barley through a dry mill process could meet the 20 percent GHG emissions reduction threshold necessary to qualify as renewable fuel (D-code 6), as well as the 50 percent GHG emissions reduction threshold necessary to qualify as advanced biofuel provided there were certain limits on process energy. EPA requested comment on this analysis, including whether these D-code 5 and D-code 6 pathways should be added to Table 1 to 40 CFR 80.1426. In response to this NODA, EPA received a number of comments supporting our analysis, as well as comments that raised concerns about the analysis. In this document we provide a summary of the major comments related to barley starch ethanol produced through the MAB processes, and EPA’s response to those comments. We are summarizing and responding to all of the comments received on the Barley NODA that are relevant to the lifecycle analysis in a separate, attached memorandum.

Based on the process information provided by MAB and EPA’s analysis of that information as described in this document, ethanol produced by MAB from barley starch through a dry mill process will achieve a 50 percent reduction in GHG emissions compared to the statutory petroleum baseline, and qualify as advanced biofuel (assuming the other regulatory requirements are satisfied) if MAB limits energy use as specified in Section IV (“Conditions and other Regulatory Provisions”) of this document. Specifically, in order to generate advanced biofuel (D-code 5) RINs for ethanol derived from barley starch at MAB’s Great Falls, Montana facility, the ethanol must be produced through a dry mill process using no more than 30,700 British thermal units (Btu) of natural gas and no more than 0.84 kilowatt hours (kWh) of grid electricity as energy for feedstock, fuel and co-product operations¹ per gallon of barley starch

¹ The phrase “energy for feedstock, fuel and co-product operations” as used in this document means energy used in all buildings or other areas that are used in any part of 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, 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 MAB before it is sold to the ultimate consumer.

ethanol produced (the “Advanced MAB Barley Process”).² Although MAB did not specifically request EPA evaluation of a pathway for the generation of D-code 6 RINs, we have done so to allow MAB’s barley ethanol to qualify for participation in the RFS program if MAB is not able to meet the energy limits associated with the D-code 5 pathway. We have determined that barley starch ethanol produced by MAB’s Great Falls Montana facility meets the 20 percent GHG reduction requirement for renewable fuel (D-code 6) RINs provided the barley ethanol is produced through a dry mill process and only natural gas and electricity are used as energy for feedstock, fuel and co-product operations (the “Renewable MAB Barley Process”).³

The limits on natural gas and purchased electricity use associated with the Advanced MAB Barley Process are calculated and designed to ensure that the fuel produced through the Advanced MAB Barley Process attains at least a 50 percent GHG reduction as compared to the petroleum baseline fuel. We conclude that ethanol produced through the Advanced MAB Barley Process meets the 50 percent GHG reduction requirements specified under the Clean Air Act (CAA) for D-code 5 RINs.

This document is organized as follows:

- *Section I. Required Information and Criteria for Petition Requests:* This section contains information on the background and purpose of the petition process, the criteria EPA uses to evaluate the petitions and the information that is required to be provided under the petition process as outlined in 40 CFR 80.1416. This section is not specific to MAB’s request and applies to all petitions submitted pursuant to 40 CFR 80.1416.
- *Section II. Available Information:* This section contains background information on MAB and describes the information that MAB 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 today’s determination and identifies how it differs from the analyses done for previous RFS rulemakings. This section also describes how we have applied the lifecycle results to determine the appropriate D-codes for barley starch ethanol produced through the MAB Processes.
- *Section IV. Conditions and Associated Regulatory Provisions:* This section describes the conditions and associated regulatory provisions that must be satisfied to generate RINs for barley starch ethanol produced through the MAB Processes.

² Based on EPA’s evaluation, these limits represent the maximum amount of energy that the MAB process can use to produce a fuel that meets the 50 percent GHG reduction required for advanced biofuels. Based on the petition submitted by MAB, which is described in more detail in this document, we expect actual energy usage to be lower than these limits. Unless otherwise specified, in this document all references to energy content (e.g., Btu) are expressed in terms of lower heating value, and gallons of ethanol are expressed in terms of undenatured (neat) gallons at 60 degrees Fahrenheit.

³ In this document we sometimes collectively refer to both the Advanced MAB Barley Process and the Renewable MAB Barley Process as the “MAB Processes.”

- *Section V. Public Participation:* This section describes opportunities for public participation associated with this petition response.
- *Section VI. Conclusion:* This section summarizes our conclusions regarding MAB’s petition, including the D-codes MAB may use in generating RINs for barley starch ethanol produced through the MAB Processes.

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 [40 CFR 80.1426], [40 CFR 80.1426(f)(6)], or as approved by the Administrator.

Table 1 to 40 CFR 80.1426 lists the three critical components of a fuel pathway: (1) fuel type; (2) feedstock; and (3) production process. Each specific combination of the three components, or fuel pathway, is assigned a D-code. EPA may also independently approve additional fuel pathways not currently listed in Table 1 for participation in the RFS program, or a third party may petition for EPA to evaluate a new fuel pathway in accordance with 40 CFR 80.1416. In addition, producers of facilities identified in 40 CFR 80.1403(c) and (d) that are exempt from the 20 percent 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.

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 percent 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.

The petition process under 40 CFR 80.1416 allows parties to request that EPA evaluate a new fuel pathway's lifecycle GHG reduction and provide a determination of the D-code for which the new pathway may be eligible.

B. Required Information in Petitions

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

- The information specified under 40 CFR 80.76 (Registration of refiners, importers or oxygenate blenders).
- A technical justification that includes a description of the renewable fuel, feedstock(s), and production process. The justification must include process modeling flow charts.
- A mass balance for the pathway, including feedstocks, fuels produced, co-products, and waste materials production.
- Information on co-products, including their expected use and market value.
- An energy balance for the pathway, including a list of any energy and process heat inputs and outputs used in the pathway, including such sources produced off site or by another entity.
- Any other relevant information, including information pertaining to energy saving technologies or other process improvements.
- Other additional information as requested by the Administrator to complete the lifecycle greenhouse gas assessment of the new fuel pathway.

In addition to the requirements stated above, as specified in 40 CFR 80.1416(b)(2), parties who use a feedstock not previously evaluated by EPA must also include the following, and should also include, as appropriate, supporting information such as state, county, or regional crop data, commodity reports, independent studies, industry or farm survey data, and reports or other documents supporting any claims:

- Type of feedstock and description of how it meets the definition of renewable biomass.
- Market value of the feedstock.
- List of other uses for the feedstock.
- List of chemical inputs needed to produce the renewable biomass source of the feedstock and prepare the renewable biomass for processing into feedstock.

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

II. Available Information

A. Background on Montana Advanced Biofuels (MAB)

MAB petitioned the EPA under 40 CFR 80.1416 to approve the generation of advanced biofuel (D-code 5) RINs⁶ for ethanol produced from barley feedstock through a dry mill process at its Great Falls, Montana facility.⁷ A petition is required because the pathway requested in the MAB petition is not one of the approved pathways in Table 1 to 40 CFR 80.1426. The pathway requested by MAB differs from those EPA has approved previously, in that it involves producing ethanol from barley, a feedstock for which EPA has previously conducted a lifecycle GHG assessment, but for which EPA has not approved any pathways under the RFS. MAB's first petition, submitted in March 2011, was for a dry mill ethanol process that proposed multiple possible plant configurations, including 100 percent biogas for process energy produced onsite from gasified barley hulls. In July 2013, EPA described three pathways in the Barley NODA. One of the pathways was for renewable fuel (D-code 6) RINs for ethanol produced from barley feedstock using a dry mill process and natural gas and electricity for process energy. We also described two advanced biofuel (D-code 5) pathways for barley ethanol produced through a dry mill process using different combinations of biogas, natural gas, electricity (either from the grid or produced on-site) and biomass for process energy.⁸

MAB subsequently provided new production process data which described the plant configuration discussed in this decision document: a dry mill process that utilizes purchased electricity and natural gas instead of biogas. MAB requested that EPA analyze the production of barley starch ethanol using this configuration and issue a determination as to whether or not the configuration qualifies as an advanced biofuel pathway. The EPA is issuing this determination in response. The D-code 6 pathway we described in the Barley NODA was identical to the Renewable MAB Barley Process approved in this document. One of the D-code 5 pathways described in the Barley NODA was similar, though not identical, to the Advanced MAB Barley Process approved in this document.

⁶ Though MAB's petition requested only a D-code 5 pathway, we are also approving a D-code 6 pathway. This will allow the facility a pathway for the generation of D-code 6 renewable fuel RINs that could be used in the event that they are unable to meet the requirements of the D-code 5 advanced biofuel pathway.

⁷ The process data provided by MAB were submitted under a claim of confidential business information (CBI).

⁸ See 78 FR 44086-7.

B. Information Available Through Existing Modeling

The pathway addressed in MAB's petition would produce ethanol, which has already been evaluated as part of the final rule published on March 26, 2010 (75 FR 14670) (the "March 2010 RFS rule"). Therefore, no new modeling of the emissions associated with the combustion of ethanol was required because combustion of ethanol has already been modeled as part of previous RFS rulemakings. This petition only required EPA to evaluate the barley feedstock and a modified fuel production process.

C. Information Submitted by MAB

MAB supplied all the information as required in 40 CFR 80.1416 that EPA needed to analyze the lifecycle GHG emissions associated with barley starch ethanol produced through the MAB Processes. The information submitted includes a technical justification with a description of the fuel, feedstock used, and MAB's production process with modeling flow charts, a detailed mass and energy balance of the process with information on co-products as applicable, and other additional information as needed to complete the lifecycle GHG assessment.

III. Analysis and Discussion

A. Lifecycle Analysis

Determining a fuel pathway's compliance with the lifecycle GHG reduction thresholds specified in CAA section 211(o) for different types of renewable fuel requires a comprehensive evaluation of the renewable fuel's lifecycle GHG emissions as compared to the gasoline or diesel that it replaces. As mandated by CAA section 211(o), lifecycle GHG emissions analysis must evaluate the aggregate quantity of GHG emissions (including direct emissions and significant indirect emissions such as significant emissions from land use changes) related to the full lifecycle, including all stages of fuel and feedstock production, distribution, and use by the ultimate consumer.

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

- Feedstock production – based on agricultural sector models that include direct and indirect impacts of feedstock production, including emissions from land use changes and international changes in crop and livestock 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 transport – including impacts of transporting feedstock from production to use, and transport of the final fuel to the consumer.
- Fuel use – including combustion emissions from use of the fuel in a vehicle.

EPA's evaluation of the lifecycle GHG emissions attributable to the fuel described in MAB's petition request is consistent with the CAA's applicable requirements, including the definition of lifecycle GHG emissions and threshold evaluation requirements. Analysis related to feedstock production, fuel and feedstock distribution, and use of the fuel was described in the Barley NODA and is unchanged from what we describe in that document. In this document, we briefly summarize comments received on those components of our analysis and describe our analysis of the GHG emissions associated with the fuel produced through the MAB Processes. In a separate memorandum, attached to this letter, we have more extensively summarized and responded to all comments related to the lifecycle analysis.

Feedstock Production – The EPA assessed the lifecycle GHG emissions impacts would be from the use of additional volumes of barley for ethanol production and presented our analysis in the Barley NODA. The analysis EPA prepared for barley ethanol used the same set of models that was used for the March 2010 RFS final rule, including the Forestry and Agricultural Sector Optimization Model (FASOM) developed by Texas A&M University and the Food and Agricultural Policy and Research Institute international models as maintained by the Center for Agricultural and Rural Development (FAPRI-CARD) at Iowa State University.⁹

Based on expert and stakeholder input, EPA's modeling analysis assumed that 80 million gallons per year (MGY) of ethanol would be produced from spring-planted barley in 2022 and that 60 MGY of ethanol would be produced from winter-planted barley by 2022, for a total annual production of 140 MGY by 2022. In our modeled scenario all of this fuel is produced in the United States. This scenario accounts for the fuel volumes expected to be produced by the MAB facility, which would produce approximately 30-35 MGY from spring-planted barley. Further details on this analysis can be found in the NODA and the modeling and LCA results themselves are available in the EPA Docket for the NODA.¹⁰

We received several comments on the feedstock production portion of our analysis, mostly related to the modeling of barley-based ethanol described in the Barley NODA. Several of these comments are germane to the facility-specific determination we are making in this document. Among the comments critical of the feedstock analysis described in the NODA, some argued that we had underestimated the GHGs associated with barley-based ethanol, while others argued that we had overestimated these emissions. Some comments were critical of the size and geographic distribution of the volume of barley ethanol we assumed in our modeling. Other comments criticized the treatment of natural grassland in the FASOM component of the analysis. We also received comments that questioned our treatment of barley grown in the spring and barley grown in the winter as a single commodity. Despite these and other criticisms however, the majority of comments we received were supportive of the creation of one or more barley

⁹ For more information on the FASOM and FAPRI-CARD models, refer to the March 2010 RFS rule preamble (75 FR 14670) or the March 2010 RFS Regulatory Impact Analysis at <http://www.epa.gov/oms/renewablefuels/420r10006.pdf>

¹⁰ 78 FR 44075; see Supporting Documents in the rulemaking docket, EPA-HQ-OAR-2013-0178, for further details.

ethanol pathways under the RFS. We have summarized and responded to all comments related to the lifecycle analysis in greater detail in the response to comment memorandum attached to this determination document.

After consideration of the public comments that are related to the lifecycle analysis, we believe that the feedstock production portion of the lifecycle GHG analysis described in the NODA provides a robust estimate of the GHG emissions, including significant indirect emissions, associated with barley production for use as ethanol feedstock at the MAB facility. On this basis, we are utilizing these estimates in this determination, unchanged from what was presented in the Barley NODA. Those estimates are presented in Table 1 below.

Fuel Production – MAB uses a dry mill fuel production process. To analyze the GHG impacts of the MAB Processes, EPA utilized the same approach that was used in the Barley NODA, taking into account the new process data provided by MAB. MAB submitted projected average annual mass and energy balance data for operations at their planned facility, including all of the energy for feedstock, fuel and co-product operations 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. The MAB Processes rely on purchased natural gas and grid electricity as energy for feedstock, fuel and co-product operations and we have applied our standard emissions factors for natural gas and grid-average electricity, as developed for the March 2010 RFS final rule, in estimating MAB's fuel production emissions. The results presented in Table 1 below assume that the MAB facility uses no more than 0.84 kWh of grid electricity and no more than 30,700 Btu of natural gas for all feedstock, fuel and co-product operations per gallon of barley starch ethanol produced. To the extent that plant operations achieve greater efficiency than what we have assumed here (for example, if MAB is able to convert barley starch into ethanol at a rate of more than 2.16 gallons per 48 lb bushel of barley), the emissions associated with fuel production will be smaller.

We received comments on the fuel production portion of our analysis in the Barley NODA. Most of these comments are not highly relevant to the lifecycle analysis or simply requested clarification regarding some aspect of our calculations. For this reason, we are not summarizing these comments here. However, as with comments received regarding our feedstock production analysis, these comments, and our responses to them, are summarized in the response to comment memorandum attached to this determination document.

Feedstock and Fuel Transport – The assessment of the pathways requested in the MAB petition includes emissions associated with feedstock transport and distribution of ethanol. Emissions factors from EPA's previous assessment for grain transport on a per-pound of feedstock basis, distiller grains and solubles on a per pound basis, and for ethanol on a per gallon basis were used to model these emissions. These factors are applicable because the sourcing radius for a barley-based ethanol facility are likely to be similar to those of other similarly sized

existing grain ethanol facilities and because ethanol produced from barley is identical to ethanol produced from other approved ethanol feedstocks.

Fuel Use – The fuel type, ethanol, and hence the fuel distribution and use for ethanol, was already considered as part of the March 2010 RFS final rule. Therefore, we applied the existing fuel distribution and use lifecycle GHG impacts for previously evaluated ethanol pathways to our analysis of the MAB petition.

Lifecycle GHG Results – Based on the analysis described above, we estimated the lifecycle GHG emissions associated with ethanol produced with the MAB Processes using barley feedstock and being powered by natural gas and purchased electricity. Table 1 below shows the lifecycle GHG emissions for these fuels, compared to the 2005 baseline gasoline.¹¹

Table 1. Lifecycle GHG Emissions for Barley Starch Ethanol Produced through the Advanced MAB Barley Process (kgCO₂e/mmBtu)¹²

	Barley Starch Ethanol Produced through the Advanced MAB Barley Process	Baseline Lifecycle GHG Emissions for Gasoline
Feedstock Production	7.3	*
Fuel Production ¹³	36.0	19.2
Feedstock and Fuel Transport	4.9	*
Fuel Use	0.9	79.0
Lifecycle Emissions	49.1	98.2
Percent Reduction	50%	--

* Emissions included in Fuel Production stage.

We have also analyzed the lifecycle GHG emissions of barley ethanol produced through a dry mill process, including 100 percent drying of distiller’s grains, with energy use values associated with common dry mill production processes. The emissions associated with this pathway are identical to those associated with the Advanced MAB Barley Process, with the exception of the Fuel Production emissions. The exact percent reduction under the Renewable

¹¹ For the Advanced MAB Pathway description in Table 1, the “Fuel Production” value is derived from the limits on natural gas and electricity established in this document. See Section IV.D below.

¹² Net emissions may not be the sum of the rows due to rounding.

¹³ The Fuel Production value for the Advanced MAB Barley Process represents the maximum energy use permitted under this pathway, as described in Section IV.D below.

MAB Pathway would depend on the efficiency of the plant, as we are not placing any specific limits on energy use for this pathway. In the Barley NODA, EPA estimated that a new dry mill ethanol facility which uses 100 percent natural gas for process energy, grid electricity, and drying 100 percent of distillers grains would be associated with emissions of approximately 39.1 kgCO₂e per mmBtu of fuel produced, and would achieve approximately a 47 percent GHG reduction compared to the petroleum baseline.¹⁴

B. Application of the Criteria for Petition Approval

Based on the information provided in the MAB petition, and the requirements specified in Section IV below, EPA is approving two pathways for the generation of RINs for barley ethanol produced at the MAB facility. EPA is specifying certain conditions that must be satisfied for ethanol produced through the approved pathways to be eligible for RIN generation. Where all the conditions are satisfied for the Advanced MAB Barley Process, EPA is authorizing the generation of D-code 5 RINs, provided that the fuel meets the other criteria for renewable fuel specified in the CAA and EPA implementing regulations. Where all the conditions are satisfied for the Renewable MAB Barley Process, EPA is authorizing the generation of D-code 6 RINs, provided that the fuel meets the other criteria for renewable fuel specified in the CAA and EPA implementing regulations.

IV. Conditions and Associated Regulatory Provisions

The authority for MAB to generate RINs for ethanol produced pursuant to the MAB Processes is expressly conditioned on MAB satisfying the applicable requirements for renewable fuel producers set forth in the RFS regulations and all conditions relevant to the pathway(s) employed by MAB that are set forth in this document. The conditions specified herein are enforceable under the CAA. They are established pursuant to the informal adjudication reflected in this decision document, and also pursuant to regulations cited below and 40 CFR 80.1416(b)(1)(vii), 80.1450(i), and 80.1451(b)(1)(ii)(W). In addition or in the alternative to bringing an enforcement action under the CAA for any violations, EPA may revoke this pathway approval if it determines that MAB has failed to comply with any of the conditions relevant to the pathway(s) employed by MAB that are specified herein.¹⁵

A. Registration

To register for the production of ethanol through one or both of the MAB processes, MAB must comply with all applicable registration provisions in 40 CFR Part 80, Subpart M. For the Advanced MAB Barley Process, the description of the ethanol production processes that is required for registration pursuant to 40 CFR 80.1450(b)(1)(ii) shall contain a plant-specific plan detailing how MAB intends to demonstrate and document on an ongoing basis that its material

¹⁴ 78 FR 44085.

¹⁵ As with all pathway determinations, this approval does not convey any property rights of any sort, or any exclusive privilege.

inputs, process operations, energy demands, and fuel and co-product outputs conform to the definitions of the Advanced MAB Barley Process and the Renewable MAB Barley Process in this decision document.¹⁶

To register for the pathway that includes the Advanced MAB Barley Process, the plan submitted pursuant to 40 CFR 80.1450(b)(1)(ii) will describe in detail how MAB will monitor and record on an ongoing basis all of MAB's energy for feedstock, fuel and co-product operations, and how it will calculate and record the energy use per gallon of barley starch ethanol in order to demonstrate compliance with the natural gas and electricity limits specified in Section IV.D of this determination.

If MAB intends to simultaneously utilize two or more feedstocks to produce ethanol, the plan submitted pursuant to 40 CFR 80.1450(b)(1)(ii) for the Advanced MAB Barley Pathway will include a detailed description of how MAB will monitor, record and allocate energy use between the ethanol produced from barley starch and ethanol produced from other feedstock(s) in order to demonstrate compliance with the energy use limits specified in Section IV.D of this determination. In this case, all energy use for barley pre-processing and transport of the processed barley before it is commingled with other feedstocks will be allocated to the barley starch ethanol. Energy used to convert feedstocks to ethanol (e.g., heat for fermentation and distillation) will be allocated on the basis of the starch content of the barley feedstock input into the process as a percentage of all starch going into the process, on a dry mass basis. In the case of coproduct drying, the allocation will be performed on the basis of the non-starch content of the barley feedstock input into the process as a percentage of all non-starch feedstock material going into the process, on a dry mass basis.

To register for the pathway that includes the Renewable MAB Barley Process, the description of the MAB process that is required for registration pursuant to 40 CFR 80.1450(b)(1)(ii) shall demonstrate that MAB uses a dry mill process, using only natural gas and electricity for all energy used for feedstock, fuel and co-product operations.

B. Recordkeeping

MAB must comply with all applicable recordkeeping requirements, including those listed in 40 CFR 80.1454. EPA is interpreting the requirements related to the type and quantity of fuel used for process heat pursuant to 40 CFR 80.1454(b)(3)(vii) to refer to the amount of purchased electricity and natural gas used as energy for feedstock, fuel and co-product operations to produce biofuel through the MAB Processes. Use of any other type of process heat fuel would be inconsistent with the MAB Processes as specified in this determination. In addition, MAB must adhere to all recordkeeping provisions of the plan developed pursuant to 40 CFR

¹⁶ All of the registration materials required by 40 CFR 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 40 CFR 80.1450(b)(2).

80.1450(b)(1)(ii) and accepted at registration, as referenced in Section IV.A. This includes MAB's calculations to demonstrate compliance with the conditions for RIN generation through the MAB Processes as specified in Section IV.D of this determination.

C. Reporting

MAB must comply with all applicable reporting requirements, including those listed in 40 CFR 80.1451. As part of the quarterly RIN generation reports required under 40 CFR 80.1451(b), MAB shall submit to EPA the information specified for recordkeeping in the plan developed pursuant to 40 CFR 80.1450(b)(1)(ii) that was prepared during the relevant quarter, including but not limited to MAB's calculations to demonstrate compliance with the conditions for RIN generation as specified in Section IV.D of this determination.¹⁷

D. RIN Generation

MAB must comply with all applicable RIN generation requirements including those listed in 40 CFR 80.1426 and in this determination. In addition, the authority for MAB to generate RINs for barley starch ethanol produced through the MAB Processes is expressly conditioned on MAB demonstrating through records available as of the date of RIN generation that the amount of barley starch ethanol used to generate the RINs meets the following requirements:

1. The barley starch ethanol was produced no more than 365 days prior to the date that MAB wishes to generate RINs for the fuel.
2. To generate advanced biofuel (D-code 5) RINs for barley starch ethanol produced through the Advanced MAB Barley Process, MAB must be able to demonstrate that it used no more than 0.84 kWh of grid electricity and no more than 30,700 Btu of natural gas for all feedstock, fuel and co-product operations per gallon of barley starch ethanol produced, calculated as an average across the sum of all gallons of barley starch ethanol produced at the MAB facility (including all ethanol for which no RINs were generated and all ethanol for which D5 or D6 RINs were generated) over a time period ending on the day prior to the date of RIN generation, and beginning on the day after the pathway that includes the Advanced MAB Barley Process is activated in EPA's electronic registration system or 365 days prior to the date of RIN generation, whichever is more recent.

¹⁷ Since the information prepared pursuant to Section IV.B must be included in the MAB quarterly RIN generation reports to EPA, it follows that this information is subject to attest engagement requirements pursuant to 40 CFR 80.1464(b).

3. To generate renewable fuel (D-code 6) RINs for barley starch ethanol produced through the Renewable MAB Barley Process, MAB shall utilize only natural gas and electricity for all energy used for feedstock, fuel and co-product operations.

V. Public Participation

As part of the March 2010 RFS rule, 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 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 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).

Prior to responding to the petition submitted by MAB, we issued the Barley NODA, published on July 23, 2013 (78 FR 44075). In this NODA, EPA requested comment regarding whether we should add pathways for the production of ethanol from barley starch using dry mill processes to Table 1 to 40 CFR 80.1426, including pathways for both D-code 5 and D-code 6. The Barley NODA included an analysis which showed that fuels produced under these pathways could meet the 20 percent GHG emissions reduction threshold necessary to qualify as renewable fuel, as well as the 50 percent GHG emissions reduction threshold necessary to qualify as advanced biofuel providing there were certain limits on energy for feedstock, fuel and co-product operations. EPA received a number of comments supporting our analysis, as well as comments that raised concerns about the analysis. We have summarized and responded to all of the comments that are related to the lifecycle analysis in a separate, attached memorandum.

VI. Conclusion

Based on our assessment of the information provided in the MAB petition, the analysis presented in the Barley NODA and in comments received on the NODA, we have determined that ethanol produced from barley feedstock through the MAB Processes meets the lifecycle GHG reduction requirements to qualify for renewable fuel (D-code 6) RINs, and, under certain conditions, the requirements to qualify for advanced biofuel (D-code 5) RINs. To qualify for RINs, the fuel produced through the MAB Processes must also meet the other definitional criteria for renewable fuel (e.g., used to reduce or replace petroleum-based transportation fuel, heating oil, or jet fuel) specified in the CAA and EPA's implementing regulations.

This approval applies specifically to Montana Advanced Biofuels, LLC and to the process, materials used, fuels produced, and energy sources used for fuel produced through the MAB Processes as outlined and described in the petition request and subsequent information submitted by MAB. This approval is effective as of signature date. RINs may only be generated under these pathways for fuel that is produced after the date of activation of MAB's registration for these pathways.¹⁸

The OTAQ Reg: Fuels Programs Registration and OTAQEMTS: OTAQ EMTS Application will be modified to allow MAB to register and generate D-code 6 RINs for the production of ethanol from barley starch feedstock using a production process of "Renewable MAB Barley Process." It will also be modified to allow MAB to register and generate D-code 5 RINs for the production of ethanol from barley starch feedstock using a production process of "Advanced MAB Barley Process." This document has no impact on the ability of MAB to register and generate RINs for renewable fuel produced in accordance with 40 CFR 80.1426(f)(6) or pursuant to any of the pathways specified in Table 1 to 40 CFR 80.1426.

¹⁸ The date of activation of MAB's registration is the date that the pathway is allowed to be used in EMTS.