

POET Method 2A Application
Utilizing CARB Draft Application Form, Version 9 (Dated 11/1/2010)

I. **Application Submission Date:** 24 February 2012

II. **Company Contact Information**

a. Company Name: [POET, LLC](#)

b. Mailing Address:

Address Line 1	3939 N. Webb Road
Address Line 2	
City	Wichita
State/Province	Kansas
Zip/Postal Code	67226

c. Main Company Phone Number: [\(316\) 303-1380](#)

d. Secondary Company Phone Number:

e. Fax number: [\(316\) 303-3893](#)

f. Company Web Site URL: www.poet.com

g. Primary Method 2A/2B Contact Person:

Name: [Bob Whiteman](#)

Position/Title: [CFO](#)

Email Address: bobwhiteman@poetep.com

Office Phone Number: [\(316\) 303-1382](#)

Mobile Phone Number:

Fax Number:

h. Consultant/Third Party Application Preparer:

Name: [Jim Lyons](#)

Position/Title: [Senior Partner](#)

Affiliation/Firm: [Sierra Research](#)

Email Address: jlyons@sierraresearch.com

Office Phone Number: 916-444-6666

Mobile Phone Number:

Fax Number: 916-444-8373

Consulting entity's web site URL: www.sierraresearch.com

- i. LCFS Reporting Tool Organization ID code (if known):
- j. U.S. Environmental Protection Agency (U.S. EPA) Company ID (if known):
- k. U.S. EPA Facility ID (if known):

III. Pathway Information

- a. Pathway application type. Applicants are encouraged to discuss their pathway application types with ARB staff before proceeding. Please check one box only.

Method 2A: Sub-pathway Method 2B: New Pathway

- b. Brief description of proposed pathway. Please emphasize the important innovations and/or distinctive characteristics associated with the proposed pathway or sub-pathway

This application details Midwest corn ethanol production via the raw starch hydrolysis (RSH) dry-mill production processes developed by POET, LLC – with natural gas and electricity providing the process fuel for production. Carbon Intensity, or CI, for wet and dry DGS co-products are estimated separately in this application

The raw starch hydrolysis method utilized eliminates the cooking step of conventional ethanol fuel production. Specifically, this cold cook process, which occurs at 86 to 104 degrees Fahrenheit, eliminates the need for both liquefaction and saccharification steps. The ground corn is slurried with water and both gluco amylases and alpha amylases, followed directly by fermentation. Data show that ethanol yield (gallons/bushel) increases with RSH over conventional ethanol production. In this application, CI and energy impacts associated with fuel development are estimated from facility-specific reporting of ethanol yield, natural gas consumption, electricity consumption and DGS co-product yield.

c. For Method 2A Applications only:

1. Reference pathway (Existing fuel pathway to which the proposed new sub-pathway is most closely related). The carbon intensity of the reference pathway must be higher by at least 5 gCO₂e/MJ than the carbon intensity of the proposed pathway described in this application. Show all pathway information exactly as it appears in the LCFS Lookup Table:

Fuel: Ethanol from Corn

Pathway Description: There are 2 CARB-defined Reference Pathways as part of this application (for the type of DGS co-product assumed):
 (1) Midwest; Dry Mill; Dry DGS; NG
 (2) Midwest; Dry Mill; Wet DGS; NG

Carbon Intensity Values (gCO₂e/MJ):

Direct Emissions: In numeric order listed above:
 (1) 68.40 g CO₂e/MJ
 (2) 60.10 g CO₂e/MJ

Land Use or Other Indirect Effect:
 30.00 g CO₂e/MJ (ARB default for corn ethanol, used for all Reference pathways)

Total: In numeric order listed above:
 (1) 98.40 g CO₂e/MJ
 (2) 90.10 g CO₂e/MJ

2. Compositional differences (if any) between the fuel produced by the new sub-pathway and the reference pathway identified in item c, 1, above).

There are no compositional differences between corn ethanol produced by the newly defined sub-pathway of this application versus corn ethanol produced by the Reference pathways.

d. Final carbon Intensity of the proposed pathway or sub-pathway:

DGS Type	Carbon Intensity (CI, g CO ₂ e/MJ)		
	Direct CI	Indirect CI	Total CI
Dry	59.76	30	89.76
Wet	51.41	30	81.41

- e. Annual volume of fuel that would be produced using the proposed new pathway (millions of gallons per year [MGY]):

DGS Type	Annual Fuel Volume (MGY)
Both (Combined)	247

f. Annual volume of fuel produced using the proposed new pathway that would enter the California market: **California sales volumes are TBD – at some level in excess of the regulatory minimum requirement.**

1. This production volume is expected to be achieved within how many years from the start of production? **The production lines are fully operational already.**

2. Does the applicant expect this volume to be achieved by a single or by multiple facilities?

A single facility Multiple facilities

3. If the applicant expects this volume to be achieved by multiple facilities, would all facilities be owned by a single firm?

Single firm Multiple firms

g. Lower Heating Value of the fuel to be produced from the new pathway (MJ per gallon): **CA-GREET1.8b default value of 80.53 MJ/gal is assumed to apply to all 14 corn ethanol sub-pathways. Note that 80.53 MJ/gal was converted from the 73,660 BTU/gal, which are the units reported in CA-GREET1.8b.**

h. The range of production volumes over which the proposed pathway carbon intensity value is valid. The values reported below must be supported in the documentation accompanying this application.

DGS Type	Lower Bound Fuel Volume (MGY)	Upper Bound Fuel Volume (MGY)
Both (Combined)	10	247

i. Please provide any information that may be helpful in determining the land use change impacts (if any) of the proposed pathway. Although it is ARB’s responsibility to perform all land use change impact analyses, the applicant may provide any information that may be useful to the ARB in completing that analysis.

POET, LLC does not possess any information related to indirect CI impacts (due to land use changes) related to corn farming. The ARB default value for corn ethanol indirect impacts (30 g CO₂e/MJ) is used in this application without exception as stated clearly in this application that the land-use change impact is the responsibility of CARB.

IV. Application Submittal Checklist. Listed below are the documents and files that may be submitted in support of a method 2A/2B application. Check the box to the left of each document or file type included in your submittal. After each submittal category is a check box labeled “includes trade secrets.” Check that box if the submittal category contains any information the applicant considers to be a trade secret. In the actual submittal, the specific information falling into the trade secret category must be clearly marked. Additional information regarding the submission of trade secrets can be found in the Instructions above.

- Pathway life cycle analysis report (required).
 - Includes trade secrets*
- CA-GREET model results (please submit the full CA-GREET spreadsheet) (required).
 - Includes trade secrets*
- All operating permits issued by the local air pollution control authority (required)
- One or more process flow diagrams covering the complete production process, including all inputs (feedstocks, process energy, etc.) and outputs (finished fuel, co-products, wastes, etc.) (required).
 - Includes trade secrets*
- A comprehensive list of all stationary combustion-powered equipment associated with the production facility. List entries should name the equipment, briefly describe its function, identify the fuel or fuels used, and quantify fuel use on a per-gallon-of-finished-fuel-produced basis (required)
 - Includes trade secrets*
- Equipment technical specifications
 - Includes trade secrets*
- Production process schematics, technical drawings flow diagrams, maps, or other graphical representations (other than/in addition to the required process flow diagram)
 - Includes trade secrets*
- Engineering reports
 - Includes trade secrets*
- Technical papers or journal articles
 - Includes trade secrets*
- Emissions monitoring data or emissions modeling results
 - Includes trade secrets*

- Spreadsheets, data files, and similar files documenting the calculations behind the fuel life cycle analysis
 - Includes trade secrets*
- Other: In the space below, describe any additional submittals. Rationales for documents submitted or omitted may also be provided.
 - Includes trade secrets*

Other submittals include:

Utility Statements