

Request for Information (RFI) DE-FOA-0001526: Biofuels & Bioproducts Process Pilot Verification Capabilities

Modification 000002

DATE: March 5, 2016
SUBJECT: Request for Information (RFI)

Modification 000002: The purpose of this modification is to extend the response deadline to March 11, 2016 at 5:00 PM (ET). All modifications to the RFI are highlighted in yellow in the body of this RFI document.

Modification 000001: The purpose of this modification was administrative and internal to DOE. There were no changes made to the RFI document.

Description: The U.S. Department of Energy (DOE) is seeking input from industry, academia, national laboratories and other biofuels and bioproducts stakeholders to identify existing pilot or process development scale facilities with the capability to perform process verifications for biomass conversion pathways to biofuels, bioproducts or intermediates which integrate multiple unit operations on a scale of approximately 0.5 or greater tons of dry biomass input per day.

Background: The mission of DOE's Bioenergy Technologies Office (BETO) is to develop and transform the country's biomass resources into commercially-viable high performance biofuels, bioproducts, and biopower through targeted research, development, demonstration and deployment (RD&D) supported through public and private partnerships. In this regard, BETO has a 2017 goal to verify a conversion pathway to a hydrocarbon biofuel modeled at \$3/gallon gasoline equivalent (GGE). To facilitate this goal, BETO supports RD&D efforts which advance technologies to produce both drop-in biofuels which can replace gasoline, diesel and jet fuel and biomass-based products/chemicals which can compete with their petroleum-derived counterparts and enable biofuels deployment.

In the past, BETO has gathered process performance data used in its design cases and State of Technology evaluations by conducting pilot-scale runs at national laboratory facilities such as the Integrated Biorefinery Facility (IBRF) or the Thermochemical User Facility (TCUF) at

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the National Renewable Energy Laboratory (NREL). BETO is interested in assessing what other capabilities may exist to perform such process verifications at other domestic locations that have different or additional capabilities than those currently used. In addition, as part of the Omnibus Appropriations Bill of 2016, Congress has directed DOE to “develop a comprehensive list of existing demonstration and pilot-scale multi-user facilities for bio-based products, chemicals, and intermediates...and report to the Committees on Appropriations of both Houses of Congress not later than 90 days after the enactment of this Act.”

Purpose: The purpose of this RFI is to develop a comprehensive list of locations which exist as (or are willing to act as) pilot or process development scale multi-user facilities for biofuels and bio-based products, chemicals, and intermediates, including synthesis gas, cellulosic sugars, bio-oil, hydrogen, biogas and methane. *We are exclusively requesting information on capabilities which are on the scale of approximately 0.5 tons of dry biomass input per day or greater.* This information will be used to assess existing capabilities which could be leveraged to perform process verifications and determine the gaps of such an inventory. This is solely a request for information and not a Funding Opportunity Announcement (FOA). EERE is not accepting applications.

Disclaimer and Important Notes: This RFI is not a Funding Opportunity Announcement (FOA); therefore, EERE is not accepting applications at this time. EERE may issue a FOA in the future based on or related to the content and responses to this RFI; however, EERE may also elect not to issue a FOA. There is no guarantee that a FOA will be issued as a result of this RFI. Responding to this RFI does not provide any advantage or disadvantage to potential applicants if EERE chooses to issue a FOA regarding the subject matter. Final details, including the anticipated award size, quantity, and timing of EERE funded awards, will be subject to Congressional appropriations and direction.

Any information obtained as a result of this RFI is intended to be used by the Government on a non-attribution basis for planning and strategy development; this RFI does not constitute a formal solicitation for proposals or abstracts. Your response to this notice will be treated as information only. EERE will review and consider all responses in its formulation of program strategies for the identified materials of interest that are the subject of this request. EERE will not provide reimbursement for costs incurred in responding to this RFI. Respondents are advised that EERE is under no obligation to acknowledge receipt of the information received or provide feedback to respondents with respect to any information submitted under this RFI. Responses to this RFI do not bind EERE to any further actions related to this topic.

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Proprietary Information: Because information received in response to this RFI may be used to structure future programs and FOAs and/or otherwise be made available to the public, **respondents are strongly advised to NOT include any information in their responses that might be considered business sensitive, proprietary, or otherwise confidential.** If, however, a respondent chooses to submit business sensitive, proprietary, or otherwise confidential information, it must be clearly and conspicuously marked as such in the response.

Responses containing confidential, proprietary, or privileged information must be conspicuously marked as described below. Failure to comply with these marking requirements may result in the disclosure of the unmarked information under the Freedom of Information Act or otherwise. The U.S. Federal Government is not liable for the disclosure or use of unmarked information, and may use or disclose such information for any purpose.

If your response contains confidential, proprietary, or privileged information, you must include a cover sheet marked as follows identifying the specific pages containing confidential, proprietary, or privileged information:

Notice of Restriction on Disclosure and Use of Data:

Pages [List Applicable Pages] of this response may contain confidential, proprietary, or privileged information that is exempt from public disclosure. Such information shall be used or disclosed only for the purposes described in this RFI DE-FOA-0001526 The Government may use or disclose any information that is not appropriately marked or otherwise restricted, regardless of source.

In addition, (1) the header and footer of every page that contains confidential, proprietary, or privileged information must be marked as follows: “Contains Confidential, Proprietary, or Privileged Information Exempt from Public Disclosure” and (2) every line and paragraph containing proprietary, privileged, or trade secret information must be clearly marked with double brackets or highlighting.

Evaluation and Administration by Federal and Non-Federal Personnel: Federal employees are subject to the non-disclosure requirements of a criminal statute, the Trade Secrets Act, 18 USC 1905. The Government may seek the advice of qualified non-Federal personnel. The Government may also use non-Federal personnel to conduct routine, nondiscretionary administrative activities. The respondents, by submitting their response, consent to EERE providing their response to non-Federal parties. Non-Federal parties given access to responses must be subject to an appropriate obligation of confidentiality prior to

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being given the access. Submissions may be reviewed by support contractors and private consultants.

Request for Information Categories and Questions

Question 1: Technology Pathway

What is the primary biomass conversion technology process available at your facility? Very briefly describe the major process steps used at your facility and the product(s) you have generated or can generate. Include a simple process flow diagram (an example can be seen below in Figure 1). Specify the feedstock(s) used, major intermediates and the final product. Please clarify if the biofuels/bioproducts produced are derived from first generation (e.g. sugars, vegetable oil) or second generation (e.g. lignocellulosic biomass) sources. If you have multiple conversion process piloting capabilities, please describe them separately.

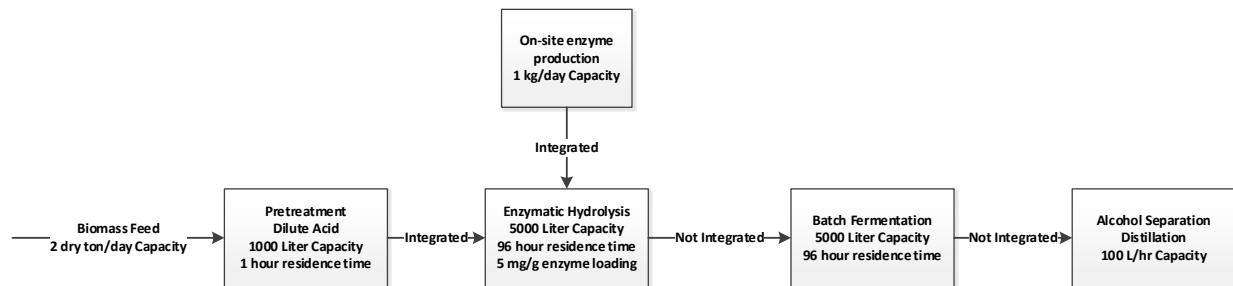


Figure 1. Example block flow diagram

Question 2: Unit Operations

Briefly describe the individual unit operations in place at your facility, such as (but not limited to) pretreatment reactors, gasifiers, and fermenters, providing the information identified in Table 1 below. This should include information on scale/capacity, maximum continuous run time, acceptable feedstocks and an achievable throughput volume per day as applicable to specific unit operations. If multiple conversion technology piloting capabilities exist, please use separate tables for each capability.

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Table 1. Unit Operation Summary Table

Unit Operation	Scale (diameter, throughput, volume, etc. as appropriate)	Operating Conditions (Temp, pH, etc. approximate or range is acceptable)	Max Continuous Run time (hrs)	Acceptable Feedstocks and specifications (e.g. pine pellets, lignin cake at <30% moisture)	Throughput per day (feedstock or product)

Question 3: Integration

To what extent are the individual unit operations integrated in a manner which allows for the process to run continuously? Please describe your feedstock system: in what format is it received; what, if any, on-site processing or preparation do you perform; how is the feedstock introduced into the first conversion unit operation? To what extent are critical recycle streams within the overall process design incorporated as part of your installed process? To what extent can your facility and/or process speedily incorporate additional or alternate unit operations if they were available?

Question 4: Accessibility

Please describe whether your facility is open for lease or rent to external users and, if so, whether you have any intellectual property protocols in place for external users. If you would be interested in collaboration with third parties or national laboratories to integrate additional unit operations or develop alternative pathways which build off of those already in place, please describe any requirements or limitations you would want to see in the collaboration.

Question 5: Analytical capabilities and staff

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Describe your on-site analytical capabilities/instrumentation to determine mass balance, yields, and the identity of products formed? How is the data monitored and stored? What is the size of the operational staff required to run the continuous process?

Question 6: Permits

Please describe the operating permits in place to operate your facility and indicate whether the facility is fully and properly permitted. This would include (but is not limited to) items such as air, wastewater treatment, boiler, and Genetically Modified Organism (GMO) permits.

Request for Information Response Guidelines

Responses to this RFI must be submitted electronically to **PilotVerificationRFI@ee.doe.gov** no later than 5:00pm (ET) on **March 11, 2016**. Responses must be provided as attachments to an email. It is recommended that attachments with file sizes exceeding 25MB be compressed (i.e., zipped) to ensure message delivery. Responses must be provided as a Microsoft Word (.docx) attachment to the email, and no more than 15 pages in length, 12 point font, 1 inch margins. Only electronic responses will be accepted.

Please identify your answers by responding to a specific question or topic if applicable. Respondents may answer as many or as few questions as they wish.

EERE will not respond to individual submissions or publish publicly a compendium of responses. A response to this RFI will not be viewed as a binding commitment to develop or pursue the project or ideas discussed.

Respondents are requested to provide the following information at the start of their response to this RFI:

- Company / institution name;
- Company / institution contact;
- Contact's address, phone number, and e-mail address.

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