

REQUEST FOR INFORMATION



**U.S. Department of Energy
Energy Efficiency and Renewable Energy
Office of the Biomass Program
Golden Field Office**

Advanced Biomass Feedstock Logistics Systems

Request For Information Number: DE-FOA-0000791

CFDA Number 81.087

Issue Date: November 7, 2012

Closing Date: November 21, 2012, 5:00 PM EDT

Responses must be submitted to: Logistics_RFI@go.doe.gov

This is a Request for Information (RFI) only. DOE will not pay for information provided under this RFI and no project will be supported as a result of this RFI. This RFI is not accepting applications for financial assistance or financial incentives. DOE may or may not issue a Funding Opportunity Announcement (FOA) based on consideration of the input received from this RFI.

Department of Energy: Office of the Biomass Program
Request for Information
DE-FOA-0000791

Program Manager / Area: Valerie Reed, Acting Program Manager, Office of the Biomass Program (OBP or the Biomass Program), Energy Efficiency and Renewable Energy (EERE), U.S. Department of Energy (DOE).

Subject:

This is a Request for Information (RFI) regarding the accompanying “Biomass Densification Workshop Report: Transforming Biomass to Feedstocks” (hereafter referred to as “Workshop Report”) prepared for the U. S. Department of Energy (DOE) Office of the Biomass Program (OBP) as a result of its Biomass Densification Workshop held August 23-24, 2011 in Idaho Falls, Idaho. The Workshop Report is appended to this RFI and can also be downloaded via the internet from https://inlportal.inl.gov/portal/server.pt/community/bioenergy/421/densification_workshop.

Description:

DOE is issuing this RFI to obtain input from all interested stakeholders and the research community regarding efficient strategies and technologies for reducing the delivered cost of lignocellulosic biomass, increasing industry-accessible biomass volumes, and ensuring input quality specifications required by a variety of biorefinery processes are met. This area is considered extremely important to achieving the 2022 biofuels goals for the Biomass Program under the Energy Independence and Security Act of 2007 (EISA, 2007).

Background:

The National Biofuels Action Plan (<http://www1.eere.energy.gov/biomass/pdfs/nbap.pdf>) was released in October, 2008. This report, published by the Biomass Research and Development Board, identified Feedstock Logistics as one of the seven action areas for recommended research in the Biomass Program. In FY2009, the Biomass Program issued a Feedstock Logistics Funding Opportunity Announcement (FOA) directed at the development of supply chain strategies and purpose-designed equipment to reduce the delivered cost of cellulosic feedstock materials. Five projects were selected for award under this FOA. Each project has produced useful and valuable results that clearly show that a variety of feedstocks can be produced at lower cost with purpose-designed equipment than with conventional machinery that was designed for different uses.

DOE’s Biomass Densification Workshop focused on two major areas:

- 1) Increasing the bulk and energy density of biomass resources for improved logistics; and
- 2) Upgrading biomass through preconversion and formulation for improved performance in bioenergy applications.

See the Workshop Report for results:

(https://inlportal.inl.gov/portal/server.pt/community/bioenergy/421/densification_workshop).

OBP and other stakeholders in the advanced biofuels arena currently consider feedstock quality input specifications to be clearly distinct for biochemical and thermochemical conversion processes.

For example, it is thought that fast pyrolysis processes typically work best using woody feedstocks with a particle size between 2-6 mm, a moisture content less than 10% by weight, and an ash content less than 1% by weight. On the other hand, biochemical processes are generally better optimized when fed herbaceous feedstocks with a moisture content less than 20% by weight, an ash content less than 7% by weight, and a carbohydrate content of at least 59% by weight. Feedstock specifications required by a conversion process may actually be more complex than stated above, involving more criteria (e.g., ranges in values) and are likely to change over time as the industry matures. Therefore, feedstock supply chain operations must be capable of reliably delivering feedstocks that meet a variety of material specifications. In addition, feedstock supply chain operations must be capable of reacting to the demands of the evolving biomass processing industry.

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Purpose:

The DOE plans to support the continued increase of sustainably produced domestic biofuels from cellulosic feedstocks, such as agricultural residues (e.g., corn stover, bagasse), energy crops (e.g., switchgrass, miscanthus, energycane, sorghum, poplar, willow), forest resources (e.g., forest thinnings, wood wastes), and sorted municipal solid waste. This RFI provides agri-forestry businesses, industrial equipment manufacturers, growers, contract harvesters, universities, national laboratories, researchers, freight handlers, transport specialists, biorefiners, and other interested stakeholders with an opportunity to provide DOE with information and input regarding feedstock logistics barriers and advice for how DOE should consider focusing its feedstock logistics Research, Development & Demonstration (RD&D) efforts in order to advance the bioenergy industry. This RFI solicits information regarding what is necessary to modify or create efficient logistics systems, including equipment capable of supporting a rapid increase in the domestic, sustainable volume of delivered cellulosic biomass at quality specifications required by biorefiners.

This RFI provides all interested stakeholders and the research community with an opportunity to contribute their views to help inform the development of OBP's strategic plans, requirements, and metrics for ongoing research and development focused on producing cost-competitive hydrocarbon biofuels from terrestrial (i.e., cellulosic) biomass.

RFI Response Instructions and Guidelines:

Responses to this RFI must be submitted in Microsoft Word (.doc or .docx) or Adobe Acrobat (.pdf) format and attached to an email addressed to Logistics_RFI@go.doe.gov no later than 5:00 p.m. EDT on November 21, 2012.

DOE requests that responses to this RFI be no more than 8 pages in total length for all questions, using 1 inch margins and 12 point font. Please indicate the question being addressed (e.g., 1, 2, etc.). Questions regarding the content of this RFI must be submitted to the email address provided.

OBP recognizes that all listed questions may not be applicable to all respondents, and respondents may provide responses to all or a portion of the RFI questions. OBP requests that respondents focus only on the questions for which they can provide concise, accurate information. While opinions are considered valid input for purposes of this RFI, information that can be supported by referred technical publications or successful business operations is preferred.

DOE will not pay for information provided under this RFI, and DOE will not provide reimbursement for costs incurred in responding to this RFI. This RFI does not constitute a solicitation for proposals, and DOE is not accepting applications for financial assistance or financial incentives under this RFI. Responses to the RFI will be treated as informational only and will not be viewed as a binding commitment for the respondent to develop or pursue the project or ideas discussed. DOE may decide to issue a FOA based on consideration of the input received from this RFI, but there is no guarantee that future funding opportunities or other activities will be undertaken as a result of this RFI.

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-0000791. 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.

Questions regarding this RFI should be submitted to the RFI mailbox, Logistics_RFI@go.doe.gov. The DOE will not respond to any respondent questions or contacts received after the closure of the submission period for this RFI. DOE thanks you for your assistance and input.

Responses must be provided by no later than 5:00 PM EDT on November 21, 2012.

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Please provide the following information and submit via email to *Logistics_RFI@go.doe.gov*.

Name:

Organization:

Area of expertise:

Mailing Address:

Phone:

Email Address:

DOE invites your comments regarding the following questions. Please make your responses as clear and concise as possible, and respond to as many of the questions as you would like. Please use the numbers to identify the question to which you are responding.

1. Please provide detailed feedstock quality input specifications (at the throat of the bioreactor) for one or more biomass conversion process(es) with which you are familiar. Quality parameters of known importance include moisture content, ash content, BTU content, carbohydrate content, average particle size and particle size distribution. However, feel free to specify any other physical or chemical quality attributes that you know to be important to the success of the nascent bioconversion industry. Please briefly outline that process and the preferred feedstock in as much detail as possible.
2. What strategies could be employed to ensure that conversion process input specifications could be maintained year-round within a desired range? Please specify the feedstock(s), the parameter(s), the target input specification range for each parameter, and the strategy to ensure the preferred specification. Note that the parameter could be physical (such as particle size and distribution, flowability, etc.) or chemical (such as energy content, ash content, etc.).
3. What aspect(s) of the cellulosic feedstock logistics chain is (are) most limiting to the rapid growth and development of a vigorous and sustainable cellulosic biofuels industry in the United States? Please explain which region(s) of the country you are referring to in your reply, as well as the reasoning behind your response. What suggestion(s) do you have for reducing or eliminating this (these) hurdles for the industry?
4. What single, key strategy would you recommend to facilitate the development of efficient, reliable, and economical terrestrial biomass feedstock logistics chains? Please specify the type of feedstock and conversion process in your reply.

5. What potential future OBP investment areas would you recommend among the following to achieve the most dramatic and reliable reduction in the delivered cost of biomass feedstocks that are compatible with the input specifications of biorefinery processes?
- a. harvesting equipment;
 - b. storage;
 - c. mechanical preprocessing (including densification);
 - d. chemical preprocessing;
 - e. blending and formulation;
 - f. reduction in dry matter losses throughout the logistics chain;
 - g. methods and instrumentation to rapidly and accurately assess the quality parameters of biomass located inside or outside the biorefinery gates;
 - h. other.

Please formulate your reply in the context of a growing biorefinery industry (i.e., >1 billion gallons of fuel/year; >12-15 million dry tons of biomass/yr), and specify the process type, as well as the preferred feedstock(s).

6. What types of machinery already exist that could be used effectively at commercial biorefinery scale (i.e., >20 million gallons/yr) to accomplish the goals of the various preprocessing steps – namely mechanical and chemical preprocessing, as well as blending and formulation? More importantly, please identify any technology or infrastructure gaps where appropriate machinery does not exist or requires significant modification or improvement.
7. Please also comment on any other relevant strategies and approaches for reducing the delivered cost of biomass feedstocks, and for ensuring the desired feedstock quality at the biorefinery reactor throat.

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