

# REQUEST FOR INFORMATION



**U.S. Department of Energy**

## **Engineered High Energy Crops**

**Request For Information Number: RFI-0000003**

**CFDA Number 81.087**

**Issue Date:** April 12, 2013

**Closing Date:** April 19, 2013, 5:00 PM EDT

**Responses must be submitted to:** [EngineeredHighEnergyCrops-RFI@hq.doe.gov](mailto:EngineeredHighEnergyCrops-RFI@hq.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 prepare a Programmatic Environmental Impact Statement or issue a Funding Opportunity Announcement based on consideration of the input received from this RFI.**

**U.S. Department of Energy**  
**Request for Information on Engineered High Energy Crops**  
**RFI-0000003**

**Subject:**

This is a Request for Information (RFI) regarding the potential environmental impacts of engineered high energy crops, such as those being investigated under the Advanced Research Projects Agency-Energy's (ARPA-E) Plants Engineered to Replace Oil (PETRO) program, and potential future Department of Energy (DOE) programs to support the development and demonstration of such crops through field trials. Information gathered under this RFI will be considered in the development of an Advance Notice of Intent (NOI) to prepare a Programmatic Environmental Impact Statement (PEIS), which would analyze the potential environmental impacts of such DOE programs. The PEIS would be prepared for DOE by ARPA-E in coordination and/or consultation with other elements of DOE and co-lead and/or cooperating agencies.

**Description:**

DOE is issuing this RFI to obtain information from interested stakeholders regarding the potential environmental impacts of engineered high energy crops and potential future DOE programs to support the development and demonstration of such crops through field trials. These crops could be the source of significant fuel resources from biological production and, therefore, it is considered extremely important to understand their potential impact on the environment. Engineered high energy crops may support achieving renewable fuel goals under the Energy Independence and Security Act of 2007 (Pub. L. 110-140) ("EISA 2007").

**Background:**

DOE's mission and strategic goals include promoting U.S. energy security by providing reliable, clean, and affordable energy and strengthening U.S. technological leadership and economic competitiveness through advancements in science and technology. The mission and goals of the Bioenergy Technologies Office within DOE's Office of Energy Efficiency and Renewable Energy include the development and transformation of renewable biomass resources into commercially viable, higher-performance biofuels and advancing the domestic bioenergy industry in support of the renewable fuel goals under EISA 2007. ARPA-E's goals include enhancing U.S. economic and energy security through the development of advanced energy technologies that reduce imports of foreign oil and energy-related emissions, and ensuring that the United States maintains a technological lead in developing and deploying advanced energy technologies.

Programs to support the development and demonstration of engineered high energy crops through field trials would further the mission and goals of DOE by catalyzing the deployment of dedicated, engineered energy crops that produce more energy per acre and produce molecules that require little or no processing prior to being introduced into existing infrastructure (e.g., refineries, pipelines, and vehicles), thus enabling agriculturally-derived fuels that are cost-competitive with petroleum-based fuels. Examples of engineered high energy crops include those being investigated under ARPA-E's PETRO program as well as other projects that have a similar objective of engineering crops for increased energy capture. Additional information regarding the PETRO program and the crops

being investigated under that program is available at: <http://arpa-e.energy.gov/?q=arpa-e-programs/petro>.

**Purpose:**

DOE plans to support the continued increase of sustainably produced domestic biofuels from a range of feedstock types, including engineered high energy crops. This RFI offers interested stakeholders an opportunity to provide DOE with information and input regarding concerns about and barriers to the development of these crops, and advice for how DOE should consider focusing its research to responsibly support the development of these crops to advance the bioenergy industry.

The purpose of this RFI is solely to solicit public input for DOE's consideration. DOE will consider input received in response to this RFI in developing an Advance NOI to prepare a PEIS. The PEIS would analyze the potential environmental impacts of DOE programs to support the development and demonstration of engineered high energy crops through field trials. There is no guarantee that future funding opportunities or other activities will be undertaken as a result of this RFI or any subsequent PEIS.

**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 [EngineeredHighEnergyCrops-RFI@hq.doe.gov](mailto:EngineeredHighEnergyCrops-RFI@hq.doe.gov) and **received by no later than 5:00 p.m. EDT on April 19, 2013**. 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 by each response (e.g., 1, 2, etc.). Questions regarding the content of this RFI must be submitted to the email address provided.

DOE 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. DOE 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 refereed 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. As stated above, DOE will consider input received in response to this RFI in developing an Advance NOI to prepare a PEIS and there is no guarantee that future funding opportunities or other activities will be undertaken as a result of this RFI or any subsequent PEIS.

Because information received in response to this RFI may be used to develop or included in a future PEIS or Funding Opportunity Announcement 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 (RFI-0000003). 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 EngineeredHighEnergyCrops-RFI@hq.doe.gov. 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 received by no later than 5:00 PM EDT on April 19, 2013.**

**Please provide the following information and submit via email to  
EngineeredHighEnergyCrops-RFI@hq.doe.gov.**

**Name:**

**Organization:**

**Area of expertise:**

**Mailing Address:**

**Phone:**

**Email Address:**

**DOE invites your responses to the following questions. Please limit your responses to the questions asked and make your responses as clear and concise as possible. You may respond to as many of the questions as you would like. Please use the numbers provided to identify the question being addressed by each response (e.g., 1, 2, etc.).**

1. How do you define “engineered high energy crops?” What are examples of these crops that you think may emerge in the future? What characteristics do you think are desirable in an engineered high energy crop? What characteristics would be undesirable? Provide examples of crops that you think should be included or excluded from this definition, and why.
2. Agriculture is regional. Should DOE focus its initial efforts on specific geographic regions for the first development of engineered high energy crops? If so, what are these regions?
3. Are there specific engineered high energy crops that DOE should consider developing first in these geographic regions?
4. Is it more appropriate to examine impacts of engineered high energy crops by ecoregion (areas characterized as similar due to the presence or absence of similar biotic and abiotic phenomena), or by a legal boundary such as a state or county? Are there other delineations that might be used to determine the regional impacts of such crops?
5. What are the key concerns for the development and demonstration of engineered high energy crops? How could these concerns be mitigated? What are specific concerns regarding establishment of development-scale field trials (up to 5 acres)? What are specific concerns regarding establishment of medium-scale field trials (up to 100 acres)? What are specific concerns regarding establishment of demonstration-scale field trials (up to 15,000 acres)?
6. What are the potential benefits (environmental, economic, etc.) from the development and demonstration of engineered high energy crops and are they dependent on the specific geography in which the crops are grown? Will these benefits be observed at a development scale (i.e., field trials up to 5 acres) or only at larger scale deployment?
7. What specific agencies or organizations should DOE consider engaging with regarding an engineered high energy crop program? What specific concerns would these agencies or organizations be expected to address?
8. DOE also has interest in responses to Question 1 above with respect to the converse, i.e., “non-engineered high energy crops”. Please provide feedback as appropriate. How do you define “non-engineered high energy crops”? What are examples of these crops that you think may emerge in the future? What characteristics do you think are desirable in a non-engineered high energy crop? What characteristics would be undesirable? Provide examples of crops that you think should be included or excluded from this definition, and why.
9. Other comments.