



[6450-01-P]

## DEPARTMENT OF ENERGY

### Notice of Intent to Prepare a Programmatic Environmental Impact Statement for Engineered High Energy Crop Programs, Southeastern United States

**AGENCY:** Department of Energy (DOE)

**ACTION:** Notice of intent to prepare an environmental impact statement and conduct public scoping meetings

**SUMMARY:** The U.S. Department of Energy (DOE), Advanced Research Projects Agency-Energy (ARPA-E) announces its intent to prepare a Programmatic Environmental Impact Statement (PEIS) and conduct public scoping meetings to evaluate the potential environmental impacts of DOE's proposed action to implement one or more programs to catalyze the development and demonstration of engineered high energy crops (EHECs). EHECs are agriculturally-viable photosynthetic species containing genetic material that has been intentionally introduced through biotechnology, interspecific hybridization, or other engineering processes (excluding processes that occur in nature without human intervention), and specifically engineered to produce more energy per acre by producing fuel molecules that can be introduced easily into existing energy infrastructure.

EHECs include those being developed under the ARPA-E Plants Engineered to Replace Oil (PETRO) program. A main component of the proposed EHEC programs would be providing financial assistance for field trials to evaluate the performance of EHECs. Confined field trials may range in size and could include development-scale (up to 5 acres), pilot-scale (up to 250 acres), or demonstration-scale (up to 15,000 acres). All necessary permits, such as from the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service (APHIS), would be obtained before initiating confined field trials. This PEIS will assess the potential environmental impacts of such confined field trials in the southeastern United States.

**DATES:** DOE invites comments on the proposed scope of this PEIS from all interested parties. The scoping period for this PEIS starts with the publication of this notice and continues through **[INSERT DATE 30-DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. DOE will consider all comments submitted electronically or postmarked by **[INSERT DATE 30-DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER]**. Comments submitted after this date will be considered to the extent practicable.

DOE will conduct scoping meetings to solicit input on the issues, concerns, and alternatives of the PEIS. Poster sessions will be hosted at each location from 5:00 to 6:45 PM, followed by an open forum to receive comments from 7:00 to 9:00 PM. The scoping meetings will be held:

- July 9, 2013  
Lexington Convention Center, 430 West Vine Street, Lexington, KY
- July 10, 2013  
Mississippi e-Center at Jackson State University (Convention Hall), 1230 Raymond Road, Jackson, MS
- July 11, 2013  
Raleigh Convention Center, 500 S. Salisbury Street, Raleigh, NC

DOE will also host one web-based meeting on July 17, 2013 from 3:00 to 5:00 PM Eastern Time. Details regarding the scoping meetings, including how to participate in the web-based meeting, are provided under **SUPPLEMENTARY INFORMATION** and on the PEIS website: <http://engineeredhighenergycropsPEIS.com>.

**ADDRESSES:** Written comments may be submitted by any of the following methods:

- PEIS Website: <http://engineeredhighenergycropsPEIS.com>
- E-mail: [comments@engineeredhighenergycropsPEIS.com](mailto:comments@engineeredhighenergycropsPEIS.com)
- Mail: Dr. Jonathan Burbaum, Program Director, ARPA-E, U.S. Department of Energy, ATTN: EHEC PEIS, 1000 Independence Avenue SW, Mailstop-950-8043, Washington, DC 20585. Note: Comments submitted by U.S. Postal Service may be delayed by mail screening.

This Notice of Intent (NOI), the Draft PEIS, and the Final PEIS will be posted on the DOE National Environmental Policy Act (NEPA) website at <http://energy.gov/nepa>. These documents and additional materials relating to this PEIS will also be available on the PEIS website at: <http://engineeredhighenergycropsPEIS.com>.

**FOR FURTHER INFORMATION CONTACT:** For more information on the PEIS or to be added to the PEIS distribution list, contact Dr. Jonathan Burbaum, Program Director, by one of the methods described in the **ADDRESSES** section, or by telephone at (202) 287-5453.

For general information on the DOE NEPA process, contact Carol Borgstrom, Director, Office of NEPA Policy and Compliance (GC-54), U.S. Department of Energy, 1000 Independence Avenue SW, Washington, DC 20585, or telephone at (202) 586-4600, voicemail at (800) 472-2756, or e-mail at [askNEPA@hq.doe.gov](mailto:askNEPA@hq.doe.gov). Persons with disabilities who require alternative means for communication (Braille, large print, audio tape, etc.) should contact (800) 877-8339.

#### **SUPPLEMENTARY INFORMATION**

The EHEC PEIS (DOE/EIS-0481) is being prepared in accordance with the National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 et seq.) requirements, the Council on Environmental Quality's NEPA regulations (40 CFR Parts 1500-1508), and DOE's NEPA Implementing Procedures (10 CFR Part 1021).

DOE has prepared this NOI to inform interested parties of the planned PEIS and scoping meetings, and to invite public comments on the proposed action, reasonable alternatives for program implementation, and the range of environmental issues to be considered in the PEIS. DOE will consult with interested American Indian Tribes and federal, state, regional and local agencies during preparation of the PEIS. In addition, DOE invites agencies with jurisdiction by law or special expertise to participate as cooperating agencies in the preparation of this PEIS.

#### **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. 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, reduce energy-related emissions, and ensure that the U.S. maintains a technological lead in developing and deploying advanced energy technologies. A core aspect of ARPA-E's mission is to expedite the timeline for bringing technologies to market. The proposed programs aim to deploy EHECs that produce more energy per acre and produce fuel molecules that require little or no processing prior to being introduced into existing energy infrastructure (e.g., refineries, pipelines, and vehicles), thus promoting agriculturally-derived fuels that are cost-competitive with petroleum-based fuels. Programs that catalyze the deployment of EHECs to market, including development and demonstration field trials, would further the mission and strategic goals of DOE.

### **Purpose and Need for DOE Action**

Present day production of biofuels is limited by the relatively inefficient capture of solar energy and conversion of carbon dioxide that occurs during plant photosynthesis into a ready-to-use energy source. EHEC programs are experimenting with a variety of plants to create molecules similar to those found in petroleum-based fuels that will facilitate biofuel production. EHECs include those being developed under the ARPA-E PETRO program. Successful EHEC programs can advance the environmentally responsible deployment of biofuels produced by, or through the processing of, engineered plants to provide cost-effective, large-scale, and renewable substitute fuels.

The purpose and need for agency action is to facilitate the deployment of EHECs through funding programs that support research, development, and demonstration of EHECs up to commercial scale. In the absence of DOE funding and support for EHEC programs, scientific understanding and innovation in the responsible use of EHEC crops and, ultimately, commercial deployment of EHECs would develop more slowly or not at all. Accordingly, DOE needs to take action to catalyze the development and deployment of EHEC crops.

### **Proposed Action**

DOE proposes to develop and implement one or more programs to catalyze the development and deployment of EHECs. A main component of these programs would be providing financial

assistance to recipients, such as research institutions, independent contract growers, or commercial entities, for conducting confined field trials to test the effectiveness of EHECs. Confined field trials are experiments to evaluate the performance of a crop that are conducted under stringent terms and conditions designed to confine the experimental crop. Confined field trials may range in size and could include development-scale (up to 5 acres), pilot-scale (up to 250 acres), or demonstration-scale (up to 15,000 acres). Confined field trials are essential to test the viability of EHECs under real field conditions in local environments. Engineered crops within confined field trials are grown only after obtaining regulatory permits that identify procedures to limit or prevent the unintentional spread and establishment of the crop. Specifically, funding recipients would need to acquire a permit from the USDA APHIS before initiating each confined field trial. To acquire an APHIS permit, a funding recipient would need to prepare a permit application that provides detailed information about the nature of the crops to be introduced and the conditions that would be used to prevent the spread and establishment of the crop in the environment. Following a careful review of the permit application and a project-specific review of the proposed permitting action under NEPA, APHIS may determine to issue a permit for the proposed confined field trial. The funding recipients could then carry out the confined field trial in accordance with the terms and conditions of the APHIS permit and applicable federal, state, and local laws and regulations. Additionally, the Environmental Protection Agency (EPA), under the Federal Insecticide, Fungicide, and Rodenticide Act, regulates the planting, food, and feed use of transgenic plants into which genetic material has been inserted that imparts pesticidal properties. The Food and Drug Administration, under the Federal Food, Drug, and Cosmetic Act, regulates transgenic food and feed crops or products from transgenic crops that may come in contact with food. Analyses from this PEIS would inform these permit applications as well.

Examples of EHECs that may be used in confined field trials include, but are not limited to, crops being investigated under ARPA-E's PETRO program such as genetically engineered varieties of camelina, loblolly pine, tobacco, giant cane, sugarcane, miscanthus, sorghum, and switchgrass. For additional information regarding ARPA-E's PETRO program and the specific technologies being investigated in PETRO projects, visit the PETRO program website at: <http://arpa-e.energy.gov/?q=arpa-e-programs/petro>.

This PEIS will assess the potential environmental impacts of confined field trials in the southeastern United States. DOE's proposed action under this PEIS will be limited to the states of Alabama, Florida (excluding the Everglades/Southern Florida coastal plain ecoregion), Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, and Virginia. These states offer climate and agricultural conditions that favor cultivation of EHECs. If experience in these states indicates expansion of the EHEC program is warranted, additional states may be assessed in subsequent environmental reviews. DOE is proposing to use the EPA's Level II ecoregions (also known as "ecological regions") to assess common and different potential environmental impacts of the proposed action. Ecoregions are determined based on the presence or absence of common flora, fauna, and non-living ecosystems characteristics. The EPA Level II ecoregions are presented on the EPA's "Ecoregions Maps and GIS Resources" webpage at: [http://www.epa.gov/wed/pages/ecoregions/na\\_eco.htm#Level II](http://www.epa.gov/wed/pages/ecoregions/na_eco.htm#Level II).

### **Alternatives**

The PEIS will evaluate the range of reasonable implementation alternatives. DOE will consider a range of plant characteristics and engineered modifications when analyzing the potential environmental impacts of each alternative at the ecoregion level. The plant characteristics to be considered include, but are not limited to, potential for existing compatible relatives in the region, means of pollination, level of domestication, weediness and competitiveness, toxicity, alternative commercial uses, nativity and range, persistence in the environment, agricultural planting cycles and inputs (water, fertilizers, pesticides), and fire hazard potential.

DOE is considering the following alternatives:

- Development-scale Confined Field Trials (up to 5 acres). This scale is small in size and common for testing whether a plant will grow under agricultural conditions.
- Pilot-scale Confined Field Trials (up to 250 acres). Pilot-scale field trials begin to experiment with an engineered plant in a larger sized area and inform decisions of whether to proceed to demonstration-scale. Pilot-scale field trials could involve multiple growers at multiple smaller non-contiguous locations.
- Demonstration-scale Confined Field Trials (up to 15,000 acres). Demonstration-scale field trials test whether crops are commercially viable. This is the estimated acreage of

EHECs necessary to demonstrate a hypothetical, small-scale, commercial ethanol plant. Demonstration-scale field trials could involve multiple growers at multiple smaller non-contiguous locations.

- No Action Alternative. Under the No Action Alternative, DOE would not provide financial assistance for the development and implementation of EHEC programs. Although some private-sector field trials involving EHEC crops may be undertaken under permits issued by APHIS, for purposes of the no-action analysis DOE assumes that development of EHEC crops would occur slowly or in an uncoordinated fashion, and that wide-scale commercial deployment would not occur.

### **Preliminary Environmental Issues for Consideration**

DOE issued a public Request for Information (RFI) (DE-FOA-0000908) on April 12, 2013 soliciting input regarding concerns about and barriers to the development of EHECs (including potential environmental impacts), such as those crops being investigated under the ARPA-E PETRO program and potential future DOE programs. Responses were submitted by individuals, academic/research institutions and laboratories, environmental and health organizations, and industry groups. Responses focused on potential environmental issues such as: invasiveness, lifecycle greenhouse gas emissions, agricultural runoff; the potential for EHECs to compete with food and feed crops; specific plants to consider for EHEC programs; issues with the location, duration, and scale of field trials; the desirable environmental and commercial traits of EHECs; and specific agencies and organizations DOE should engage while developing EHEC programs. DOE considered the comments received from the RFI in developing this NOI.

DOE proposes to address the environmental issues listed below. This list is not intended to be comprehensive or to provide a predetermined set of potential impacts. DOE invites comments on whether the following resource areas and impacts are appropriate to be addressed in this PEIS. The preliminary list of potentially affected resources or activities and their related environmental issues includes:

- *Biological resources*: including potential impacts to vegetation, wildlife, threatened or endangered species, migratory birds, ecologically sensitive habitats, alteration in

weediness characteristics (invasiveness), biodiversity, and susceptibility to disease or insects;

- *Water resources*: including surface water, groundwater, soil hydrology, sedimentation, runoff, and erosion;
- *Cultural and historic resources*;
- *Floodplains and wetlands*;
- *Socioeconomic resources*: including food and feed crop supplies and prices, schools, housing, public services, employment, and local revenues;
- *Transportation*;
- *Air quality*: including regional air quality;
- *Greenhouse gas emissions and climate change*;
- *Land use*: including agriculture, farmland availability, recreation, timber harvesting, grazing, and soils;
- *Environmental justice*: including potential for disproportionately high and adverse impacts on minority and low-income populations;
- *Noise*;
- *Wilderness areas*;
- *Wild and scenic rivers*;
- *Wildfires*;
- *Visual resources*;
- *Human health and safety*;
- *Terrorism and accidents*; and
- *Cumulative impacts*: for each alternative, DOE will assess potential effects that could result from the incremental impacts of the action when added to other past, present, and reasonably foreseeable future actions, including potential impacts from commercial deployment and use of EHECs.

### **Public Scoping Process and Invitation to Comment**

*Scoping Process*: This NOI initiates the scoping process under NEPA, which helps guide the development of the Draft PEIS. To ensure that all issues related to the proposed action are

addressed, DOE requests comments to further delineate the scope, including alternatives and potential environmental issues. Interested government agencies, American Indian tribes, private-sector organizations, and the general public are encouraged to submit comments or suggestions on the scope of the PEIS. DOE is particularly interested in receiving comments on the proposed action, such as: suggestions for reasonable alternatives; the environmental issues to be considered in the PEIS; methods for assessing the common and unique impacts of confined field trials in different ecoregions; and comments concerning the proposed scale of confined field trials. DOE encourages the submission of scientific data, studies, or research to support comments.

DOE will conduct in-person and web-based scoping meetings to solicit input on the potential issues, concerns, and alternatives of the PEIS:

- July 9, 2013  
Lexington Convention Center, 430 West Vine Street, Lexington, KY
- July 10, 2013  
Mississippi e-Center at Jackson State University (Convention Hall), 1230 Raymond Road, Jackson, MS
- July 11, 2013  
Raleigh Convention Center, 500 S. Salisbury Street, Raleigh, NC

DOE will also host one web-based scoping meeting on July 17, 2013 from 3:00 to 5:00 PM Eastern Time. Information about the web-based meeting, how to register, and to sign up to provide comments, as well as information about the scoping meetings and comment instructions are provided on the PEIS website: <http://engineeredhighenergycropsPEIS.com>.

The in-person scoping meetings will include a poster session from 5:00 to 6:45 PM for the public to view exhibits related to the project and to talk with subject matter experts, followed by an open forum to provide oral comments from 7:00 to 9:00 PM. The open forum will begin with a presentation that will provide an overview of the project and the NEPA process and then the formal commenting session will begin. All oral comments will be transcribed by a court reporter to ensure that all comments are available to DOE for consideration during preparation of the Draft PEIS. Comments will be accepted at the scoping meetings, by mail, by e-mail, and

electronically through the online comment form on the PEIS website:

<http://engineeredhighenergycropsPEIS.com> (see **ADDRESSES**). DOE will give equal consideration to oral and written comments.

The scoping period will end [**INSERT DATE 30 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**]. Comments should be submitted by that date to ensure consideration (see **ADDRESSES**). DOE will consider comments e-mailed or postmarked after that date to the extent practicable.

*Personally Identifiable Information:* Personally identifiable information, such as address, telephone number, e-mail address, or other personal identifying information submitted in comments may become publicly available during the PEIS process. Individual commenters may choose to withhold personally identifiable information from their comments on the PEIS.

*PEIS Schedule and Availability:* DOE will consider public scoping comments in preparing the Draft PEIS. After consideration of comments, DOE will issue the Draft PEIS for public review. The EPA will publish a notice of availability of the Draft PEIS in the **Federal Register**, which will begin a public comment period of at least 45 days. DOE will announce the methods for commenting on the Draft PEIS, and will hold at least one public hearing. DOE will consider public comments on the Draft PEIS and respond as appropriate in the Final PEIS. No sooner than 30 days following publication in the **Federal Register** of the EPA's notice of availability of the Final PEIS, DOE will issue a Record of Decision regarding the proposed action.

Signed in Washington, DC, this 14<sup>th</sup> day of June, 2013.

Cheryl Martin

Deputy Director for Commercialization, Advanced Research Projects Agency-Energy

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