DE-FOA-0002466: Plastics Innovation Challenge Draft Roadmap Request for Information

DATE: 1/19/2021

SUBJECT: Request for Information (RFI)

Description

The U.S. Department of Energy (DOE) launched the Plastics Innovation Challenge (PIC) in 2019 as a comprehensive program to make domestic recycling and upcycling of plastic waste economically viable and energy efficient, develop new and improved plastic materials lacking the same end-of-life concerns as incumbent materials, and ultimately reduce plastic waste generation. The PIC will also position the U.S. as a global leader in design and implementation of advanced plastics recycling technologies and in the manufacture of new plastics that are recyclable by design. The PIC draws on both fundamental and applied research capabilities across the Department, the National Labs, universities, and industry.

The DOE has drafted a roadmap that identifies the initiative's vision and ambitious 2030 goals and the plans to navigate towards achieving those goals. This draft roadmap, the subject of the current RFI, outlines previous efforts by the Department, provides a background towards establishing the complexity of the plastics waste challenge, lays out five key research directions, and maps out a general timeline of potential targets for each research area. The roadmap is primarily a technical document, identifying challenges and opportunities across thermal, chemical, biological, and physical recycling and upcycling methods, as well as material design strategies for recyclability.

The PIC roadmap also serves as a unifying document, providing structure and aligning activities across the offices of the Department involved in this effort. The PIC considers approaches to plastic waste management from fundamental science all the way to technology development and field validation. By providing alignment within the Department, a framework to provide appropriate focus on select strategies to manage plastic waste, and objectives at every level of technical maturity, this roadmap will guide the Department in its efforts to meet the PIC 2030 goals. This RFI is intended to seek input on the draft roadmap and DOE research plans related to the PIC from a broad array of stakeholders across the plastics landscape and the public.

Purpose

The purpose of this RFI is to solicit feedback from interested individuals and entities, such as industry, academia, research laboratories, government agencies, and other stakeholders to ensure the PIC is optimally

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positioned to address opportunities and challenges for the development and deployment of technologies for plastic waste management and reduction. This is solely a request for information.

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.

Confidential Business Information

Pursuant to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit via email, postal mail, or hand delivery two well-marked copies: one copy of the document marked "confidential" including all the information believed to be confidential, and one copy of the document marked "non-confidential" with the information believed to be confidential deleted. Submit these documents via email or on a CD, if feasible. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

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

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Request for Information Categories and Questions

Category 1: Framework

Four strategic goals are outlined in the draft roadmap to support the mission and vision of the PIC. For reference, the mission, vision and goals are detailed below.

Mission: To deliver transformative science and technology solutions that will reduce plastic waste and lower the energy impacts of plastic production and reuse.

Vision: The United States leads the world in developing and deploying technologies that minimize plastic waste and promote energy-efficient and economic plastic design, production, reuse, and recycling.

Strategic Goals:

- Create new chemical and biological pathways to deconstruct plastics efficiently into useful chemical intermediates
- Advance the scientific and technological foundations that will underpin new technologies for upcycling chemical intermediates from plastic waste into higher-value products
- Design new and renewable plastics that have the properties of today's plastics, are easily upcycled, and can be manufactured at scale domestically
- Support an energy- and material-efficient domestic plastics supply chain by helping companies scale and deploy new technologies in domestic and global markets, while improving existing recycling technologies such as collection, sorting, and mechanical recycling.

1. How appropriate are the mission, vision, and goals for DOE investment in plastics waste management?
2. How will the metrics included in the roadmap effectively measure progress towards the proposed goals? What other metrics could be included to more effectively track progress towards these goals?
3. Does the roadmap align with the goals listed above? Are there any additional goals the Department should target?
4. How will the roadmap contribute to solving the plastics waste challenge? What could make the roadmap more effective at addressing energy efficiency, waste reduction, environmental impacts and increased implementation of recycling/upcycling?
5. What modes of technical assistance could increase implementation of recycling/upcycling and help to achieve the mission of the PIC?
6. How could the roadmap improve focus on areas and technologies at each level of scientific and technological maturity from basic science to applied RD&D?

Category 2: Technical Aspects

1. The following five questions relate to the five research areas described in the roadmap.
    i. Thermal: Given the relative maturity of this technology, are there opportunities for early-state research to bolster thermal processes for plastic waste management? What challenges, technologies, or opportunities are absent or underemphasized? What technologies are overemphasized?
    ii. Chemical: Does the roadmap describe appropriate priorities for advancing chemical recycling processes? What challenges, technologies, or opportunities are absent or underemphasized? What technologies are overemphasized?
    iii. Biological: Does the roadmap effectively cover the broad technology space of biological approaches to addressing plastic waste? What challenges, technologies, or opportunities are absent or underemphasized? What technologies are overemphasized?
    iv. Physical: Physical recycling is well-established and globally deployed. Does the roadmap adequately identify areas where innovation can lower the energy impacts of physical recycling technologies? What challenges, technologies, or opportunities are absent or underemphasized? What technologies are overemphasized?
    v. Design: What elements of design for recyclability will be most important to solving the plastic waste challenge? What challenges, technologies, or opportunities are absent or underemphasized? What technologies are overemphasized?
2. Technologies that improve the economics of recycling/upcycling or plastic reduction are critical to the success of this program. Given the presented set of research directions, what other approaches could be pursued to improve the economic viability of reuse and recycling/upcycling?
3. What additional analysis or background data on energy, petroleum use, or other relevant information should DOE consider when revising this roadmap? What areas currently lack sufficient analysis or information to adequately inform research directions?

Category 3: Partnerships

1. What activities by State other Federal government agencies could be leveraged to achieve the goals of this roadmap? How could coordination of research efforts with other agencies improve DOE's approach to the plastics waste challenge and advance specific research directions?
2. What strategic partnerships across industry and NGOs would help to realize the goals of the roadmap? How could coordination with industry and NGOs research efforts improve DOE's approach to the plastic waste challenge and advance specific research directions?
3. What mechanisms can be used to engage academia and FFRDCs to help realize the goals of the roadmap?
4. How should DOE engage internationally, if at all, to achieve the goals of the draft roadmap?

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Request for Information Response Guidelines

Responses to this RFI must be submitted to PICDraftRoadmapRFI@ee.doe.gov no later than 5:00pm (ET) 3/1/2021. It is recommended that attachments with file sizes exceeding 25MB be compressed (i.e., zipped) to ensure message delivery. Responses must be submitted as a docx or pdf and should be 12 point font with 1 inch margins. Only electronic responses will be accepted.

Please identify your answers by responding to a specific question or category 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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