

Zero-Emission Shipping Mission (ZESM): Progression to Net-Zero Emission Fuels State of the Industry

DATE: 06/01/2023 Amended 07/13/2023

SUBJECT: Request for Information (RFI)

Description

The Zero-Emission Shipping Mission, an international coalition of countries, private industry, research institutes, and civil society of which the US is a core member, set the goal to demonstrate commercially-viable zero-emission ships by 2030. This transformation requires coordination among all aspects of the shipping supply chain including feedstock supply, alternative fuel production, ship and engine manufacturers, port management, safety implementation, and government regulation. One of the largest and most nuanced discussions around maritime emissions reduction is which alternative fuel(s) to utilize. The alternative fuels under evaluation are biofuels (biodiesel, renewable diesel, bio-intermediates/residuals), renewable natural gas (RNG), methanol, hydrogen, and ammonia. Each alternative fuel comes with its own set of regionally-sensitive advantages and disadvantages. To date, this has made selection of future fuels extremely difficult. The purpose of this RFI is to understand the maritime industry's current alternative fuels trajectory, the driving forces behind it, and the key barriers to achieving this transition.

Background

The United States government, including the U.S. Department of Energy (DOE) has established ambitious goals to address global climate change and is committed to work with partner countries and industry to formulate and implement robust and actionable decarbonization plans. The Zero-Emission Shipping Mission (ZESM) through Mission Innovation (MI), the coalition of 23 countries and the European Union spearheading the carbon neutral movement, is one such international public-private partnership, co-led by the DOE, which will focus on the decarbonization challenges of ocean-going vessels. The DOE is the leader of the Fuels Pillar within the ZESM. As the lead, DOE is tasked with understanding the alternative fuels landscape and overcoming barriers to innovation and adoption of alternative fuel technologies.

The Biden-Harris Administration has committed the United States to address the climate crisis, including both ambitious domestic action and sustained international leadership. Recognizing that 3 percent of global greenhouse gas (GHG) emissions come from international shipping, all countries must do more to bend the emissions trajectory from the maritime sector. The ZESM brings together public and private partners to accelerate action in maritime decarbonization. To

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set international shipping on an ambitious zero emission trajectory, commercially viable, well-to-wake zero-emission ocean-going vessels are needed in the global fleet by 2030. Therefore, the ZESM will crystalize an ambitious alliance between countries, the private sector, research institutes and civil society to develop, demonstrate, and deploy zero-emission fuels, ships, and fuel infrastructure together by 2030 and make zero-emission ocean going shipping the natural choice for ship owners.

The ZESM created the Industry Road Map and Action Plan to provide concrete direction and actions to reach its goals. The first action within the Action Plan is to “Create a framework for knowledge sharing between zero-emission fuel vessel stakeholders with a Mission focus on 2030.” To implement this, ZESM co-lead, the Global Maritime Forum (GMF) recently released the results of a 2022 survey, titled “The shipping industry’s fuel choices on the path to net zero¹”, which focused on shippers and a subset of alternative fuels. This RFI intends to supplement this survey and is an attempt to aggregate knowledge from stakeholders to help direct actions regarding future fuels.

Purpose

The purpose of this RFI is to solicit feedback from industry, academia, research laboratories, government agencies, and other stakeholders on issues related to maritime industry alternative fuel advancement and getting to net zero greenhouse gas emissions. DOE’s Office of Energy Efficiency and Renewable Energy (EERE) is specifically interested in information on the maritime industry’s current alternative fuels trajectory, the driving forces behind it, and the key barriers to achieving this transition. 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

¹ [The-shipping-industrys-fuel-choices-on-the-path-to-net-zero_final.pdf \(globalmaritimeforum.org\)](#)

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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.

Request for Information Questions

1. Where does your organization see alternative marine fuels moving in the next 5 years? 10 years? 30 years? Which fuel(s) does your organization prefer, and can you share your strategic plans with us?
2. What benefits and challenges does your organization see in using your preferred fuel(s) over the other alternative marine fuels (ammonia, methanol, hydrogen, bio-intermediates, renewable diesel, and biodiesel)?
3. What plans does your organization have to overcome the challenges outlined regarding your fuel approach?
4. What efforts is your organization taking to decarbonize regarding fuel use?

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5. How does your organization perform Life Cycle Assessments (LCA)? Or which entity do you rely on to provide your LCA and why?
6. What outside influences are affecting your industry?
7. Is your organization collaborating with any other entities to inform your decisions?
8. What are the most critical gaps in fuel standards and standard test methods that need to be addressed to support acceptance of and markets for your organization's preferred fuel(s)?

Request for Information Response Guidelines

Responses to this RFI must be submitted electronically to **ZESM@ee.doe.gov** no later than 5:00pm (ET) on August 18th, 2023. 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 10 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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