Request for Information: Defining Sustainable Maritime Fuels in the United States

Description

An Action Plan for Maritime Energy and Emissions Innovation (Action Plan) calls for the Federal government to define Sustainable Maritime Fuel (SMF) in 2025. As described in the Action Plan, the maritime industry cannot rely solely on drop-in fuel replacements, so vessels must look towards alternative energy sources such as clean methanol, ammonia, hydrogen, electrification, and efficiency improvements as the industry moves towards zero- and near zero-emission fuels. This action is key to evaluating many subsequent goals in the plan pertaining to future production volumes of SMFs. It will also help to align community, industry, government, financiers, and other maritime stakeholders regarding what qualifies as a SMF. This alignment will help to advance technology and investment with a consistent understanding of future maritime fuels.

This Request for Information (RFI) seeks to engage industry, government, and maritime stakeholders for feedback on how to define "Sustainable Maritime Fuel."

While this RFI is being published by the U.S. Department of Energy (DOE), DOE is also working with other agencies to support the development of an SMF definition; these agencies include but are not limited to the U.S. Department of Transportation, the U.S. Department of Agriculture, the Department of State, and the Environmental Protection Agency. This collaborative effort seeks feedback on a variety of aspects that may affect the eventual SMF definition, including but not necessarily limited to: minimum carbon intensity reductions, sustainability factors, criteria air pollutant inclusion (e.g. NOx, SOx, and particulate matter), acceptable feedstocks, how to align with global requirements (e.g. International Maritime Organization (IMO) and FuelEU), and whether accounting for emission reduction technologies (such as onboard carbon capture) should be included.

Background

The maritime industry is the collection of vessels and ports involved in the transportation of materials, products, and people on the sea or connected waterways and all supporting coastal infrastructure. Domestic waterborne transportation is safe, reliable, efficient and an established mainstay of America's national transportation system. The U.S. maritime sector connects virtually every aspect of American life—from the clothes we wear and the food we eat, to the cars we drive, and the oil and natural gas used to heat and cool our homes. About 99% of U.S. overseas trade, by weight, enters or leaves the United States by ship. This waterborne cargo

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and associated activity contribute more than $500 billion to the U.S. gross domestic product (GDP) and sustain over 10 million U.S. jobs.

Many fuels are currently used to power the U.S. maritime industry, but the three main fuel types are residual fuel oil blends, distillate, and gasoline. Residual fuel oil blends are typically used to power the main propulsion engines on large ocean-going vessels (OGVs); these fuels are blended to meet international and domestic standards. Distillate fuel (including "diesel" fuel) is used mainly by auxiliary engines on large OGVs and for the main propulsion engines on commercial harbor craft, coastwise vessels, inland waterway vessels, and some larger non-commercial vessels (also known as recreational boats). Gasoline is the main fuel for non-commercial vessels such as outboard motorboats, fishing boats, and personal watercraft. All three fuels are currently sourced from crude oil resulting in a net increase in greenhouse gas (GHG) emissions on a life cycle basis. The Action Plan estimates the total amount of maritime GHG emissions from fuel sold in the United States for use in maritime applications is approximately 101.2 Million Metric Tons on a well-to-wake (WTW) basis which accounts for 4% of the U.S. transportation sector's GHG emissions.

Replacing traditional fuels with SMFs is the quickest strategy to reduce the GHG emissions from the maritime sector. Depending on the primary feedstock of sustainable fuels, GHG reductions can be at least 50% (e.g., biomass) and up to over 100% (e.g., waste).

As the use of alternative maritime fuels increases, and policy and regulatory frameworks are developed, it is important to define what qualifies as a "Sustainable Marine Fuel." Depending on the fuel feedstock and production pathways, SMFs will have significantly reduced life cycle GHG emissions compared to traditional maritime fuel. Fuels that may be considered SMF include sustainable low carbon biofuels (such as certain biodiesels, renewable diesel, renewable gasoline, and bio intermediates), clean (i.e., derived from clean electricity) methanol, clean ammonia, and clean hydrogen.

Emerging global regulations, led by the IMO and EU, mean that domestic production of SMFs will allow for U.S. energy independence and bolster U.S. competitiveness. The U.S. is capable of providing a massive amount of SMF to fuel vessels in U.S. ports, as well as sell these fuels to bunkering hubs globally.

Purpose

The purpose of this RFI is to solicit feedback from industry, academia, research laboratories, government agencies, and other stakeholders on issues related to developing a U.S. definition for a "Sustainable Maritime Fuel." DOE's Office of Energy Efficiency and Renewable Energy

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(EERE) is specifically interested in information regarding sustainability factors, minimum carbon intensity reductions, and criteria air pollutant that affect air quality such as NOx, SOx, and particulate matter, as well as acceptable feedstocks as they relate to the potential SMF definition. This is solely a request for information and not a Notice of Funding Opportunity (NOFO). EERE is not accepting applications.

Disclaimer and Important Notes

This RFI is not a Notice of Funding Opportunity (NOFO)NOFO); therefore, EERE is not accepting applications at this time. EERE may issue a NOFO in the future based on or related to the content and responses to this RFI; however, EERE may also elect not to issue a NOFO. There is no guarantee that a NOFO 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 NOFO 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,

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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 Categories and Questions

Category 1: Sustainable Maritime Fuel Definition Considerations

1) How would you define a Sustainable Maritime Fuel?
2) Are there any current definitions of SMF (locally, regionally, nationally, or globally) that should be considered when developing the national definition? If so, please provide.
3) What is the best way to incorporate multiple fuel and energy replacement types (e.g., gaseous, liquid, pressurized gas, electric power, efficiency improvements, etc.) into a singular definition of SMF?
4) What aspects of sustainability should be incorporated into a SMF definition?
5) Should potential non-GHG emissions such as criteria pollutants be included within the definition? If so, how?
6) Should there be a limit to GHG emissions in the SMF definition? If so, what should it be and why? How should these be measured?
7) What criteria should be used to determine which resources/feedstocks are acceptable for SMF?
8) What data sources and life cycle assessment methodologies are available and most appropriate for the use of domestic feedstocks for marine fuels? How might those differ with regard to international feedstocks?
9) How should potential release (slip) of methane, ammonia, other gaseous fuels or fuel derivatives be described within the definition?
10) Many of the envisioned SMFs will utilize clean hydrogen during synthesis. As such, how should the definition of "clean hydrogen[1]" be incorporated into the SMF definition?

[1] https://www.hydrogen.energy.gov/library/policies-acts/clean-hydrogen-production-standard

Request for Information Response Guidelines

Responses to this RFI must be submitted electronically to DefiningSMF@ee.doe.gov no later than 5:00pm (ET) on February 28, 2025. 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 3 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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