Growth Energy™
Expanding America's Bioeconomy

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Maritime Environment and Decarbonisation Division,
Maritime Directorate,
Department for Transport
Great Minster House
33 Horseferry Road,
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Thank you for the opportunity to provide input as part of the United Kingdom's (U.K.) Department for Transport (DfT) efforts to reduce emissions for vessels below 400 gross tonnage (GT). We hope these comments will be of assistance as you develop policy on the matter, and as you implement the U.K.'s Maritime Decarbonisation Strategy as a whole. We look forward to working with you and the U.K.'s ethanol industry.

Growth Energy is the largest association of bioethanol producers in the United States, representing 97 U.S. plants that each year produce nearly 36 billion liters of low-carbon, renewable fuel; 130 businesses associated with the production process; and tens of thousands of bioethanol supporters around the country. Growth Energy represents the leading exporters in the bioethanol industry, helping to support nearly two billion gallons of ethanol exports to over 60 countries around the world.

Related to the U.K.'s Maritime Decarbonisation Strategy, we appreciate its forward-looking purpose and the interest in considering availability, scalability, as well as the general idea that there is no "one-size-fits-all" solution. We further appreciate the interest in seizing opportunities and doing so sustainably and with an interest in expanding domestic production, particularly as it relates to biofuels.

Many countries—both independently and through the International Maritime Organization (IMO)—are looking for better marine fuel options, which is also driving many shipping lines to similarly seek something cleaner. The goal of these efforts is to replace the currently-used emissions-heavy fuels with a cleaner burning option like bioethanol. We hope any subsequent policies out of the U.K. look seriously at bioethanol as a fuel source to not just replace current maritime fuels, but do so while lowering emissions, improving the maritime sector's overall environmental footprint, and driving economic growth for farmers and rural communities around the world, including in the U.K.

Technology
Bioethanol is established, heavily researched, and can be produced from a wide range of agricultural and other goods. The bioethanol industry continuously makes investments to make the production process more efficient and, in the United States, squeeze the most value out of each kernel of corn.

The marine fuel market offers enormous potential to the American and U.K. ethanol industries—a potential 330-billion-liter opportunity—and our industry can play a key role in providing cleaner fuel options for fleets if we act now. Related to this call for evidence, it's important to ensure that different fuel opportunities are not diminished through subsequent policies. The U.K. has an opportunity to be a leader and influence other countries to decarbonise the maritime sector using low-emission options like bioethanol, but only if the use of bioethanol isn't undone by future regulatory actions.

It is important to recognize that the maritime industry (like aviation) is just at the beginning of a transition to lower-emission fuels. Any subsequent U.K. policy also needs to recognise technology is at a nascent stage and that many fuel/power options will likely be needed. Minimizing restrictions on new, alternative technologies and feedstocks will be critical to ensure any maritime targets are met. The similar supply issues facing the aviation sector and their impacts on countries' and fleets' ability to meet their emissions reduction targets offer an important lesson that regulators seeking to avoid the same pitfalls should learn from.

While we are not aware of bioethanol-specific powered fleets at either this 400 GT size or above, there is a growing portion of the maritime fleet that is methanol capable. The opportunity today is not to swap out heavy diesel with bioethanol one-to-one, although this should be left open as a potential long-term opportunity. Today, we are initially seeking ways to blend bioethanol with methanol. With some regulatory and educational efforts, we see no reason why those same methanol-powered vessels cannot run on bioethanol as well.

We are spearheading research (including engine testing) which will outline bioethanol's benefits to the maritime sector and the potential ease of joint implementation with other alternative fuels to minimize some of the technology and infrastructure requirements needed in such a transition. We are also working to scientifically prove what we already believe: bioethanol is a viable marine fuel on its own, as well as a drop-in substitute within methanol's existing supply chain that's compatible with existing equipment.

We would be happy to provide additional information to you on these endeavors.

Emissions and Fuel Consumption

Biofuels, especially bioethanol, are the best tool available to help decarbonise hard to abate sectors such as shipping. With our members, we are exploring possible opportunities in global shipping and believe this sector could be a substantial opportunity for our low-carbon bioethanol to compete and help drive down greenhouse gas (GHG) emissions.

The U.S. bioethanol industry has proven, and continues to prove, its ability to lower GHG emissions while delivering jobs and economic benefits to American workers and farmers. These benefits can also be extended to the U.K. bioethanol industry with expanded market opportunities like those in the maritime sector.

Bioethanol is actively documented for its GHG emissions during production and use both on-road and in aviation. We also are working on additional lifecycle analysis to look at bioethanol's emissions within engines themselves, which complements the current lifecycle analysis and modelling already in place for the production of bioethanol and its feedstocks.

Extensive research from the U.S. Department of Energy's Argonne National Laboratory has been undertaken through its Greenhouse Gases, Regulatory Emissions, and Energy use in Technologies (GREET) model.[1] GREET is actively used to qualify emissions for the U.S. government and U.S. state-based emissions reduction programs (including California), and it has been adopted by the International Civil Aviation Organization (ICAO) and is globally recognized as the leading model for emissions.

GREET has shown that today's U.S. bioethanol industry offers nearly a 50 percent reduction compared to gasoline and can get to net-zero emissions with the use of readily available technologies, such as carbon capture, utilisation, and storage. Further, a study released in September 2024 by the Energy Futures Initiative Foundation (EFIF),[2] led by Ernest Moniz, the 13th U.S. Secretary of Energy, identified pathways to further lower the GHG emissions of bioethanol.

General Questions

The request for evidence document includes questions about main barriers to accelerating the use of zero or near-zero emissions technologies, as well as any environmental impacts that we are most concerned about. Related to bioethanol, if given a fair opportunity, we are not concerned about U.S. bioethanol being able to meet emissions or environmental requirements. However, we are concerned about efforts that would misguidedly limit U.S. bioethanol, or U.K. bioethanol, on the basis of the feedstock used (such as corn) out of sustainability concerns or concerns on food supply.

Bioethanol plays a significant role in sustainably meeting the greenhouse gas reduction goals and use of renewable energy in the U.K., the United States, the European Union, Canada, and others. U.S. bioethanol decreases the use of fossil fuels and other harmful fuel additives without sacrificing food and protein requirements. Biofuels provide food and feed supply through their coproducts. Simultaneously, the use of biofuels reduces greenhouse gas emissions in transportation, enabling compliance with current mandates and reduction requirements while being fully compatible with the current vehicle fleet.

We recognize that interest in, and concern for, biofuels policies leading to land use changes served as justification for the U.K. to limit U.S. corn bioethanol in aviation fuels and for limited on-road use. We ask that the U.K. reexamine this for those current policies and that the DfT not incorporate that within these new maritime policies.

The use of U.S. corn bioethanol in the United States and concerns about land use changes have been widely discussed, investigated, and debated and we have confirmed that increased U.S.

[1] https://www.energy.gov/eere/greet

[2] https://efifoundation.org/foundation-reports/a-strategic-roadmap-for-decarbonizing-ethanol-in-the-united-states/

biofuels production has not resulted in cropland expansion nor deforestation. Instead, U.S. bioethanol production from food and feed crops has increased in productivity and sustainable agricultural practices while hefty investments in yield-increasing technology have enabled higher output from the current existing land. Furthermore, it's important to note that there is less farmland in production now compared to 100 years ago, a point that undermines claims of dramatic land use change put forth by bioethanol's critics.

The sustainable production and use of value-added agricultural commodities in the United States have supported farmers, revitalized rural communities, created jobs, increased local tax revenue, and generated economic savings for consumers. The establishment of bioethanol biorefineries has created a steady and dependable market for grains. This has driven a new generation of people to build careers in farming, and rejuvenated communities. Jobs and prospects offered by bioethanol facilities have strengthened agricultural economies, providing many positive influences on rural life.

And yet, in the United States, the significant growth of bioethanol production has not resulted in increased cropland area. Simultaneously, inputs into agricultural production have decreased, yields have increased, and efficiencies have been gained during the bioethanol production process that have enabled producers to get more bioethanol from each bushel of corn. Fuel is just one of the many things U.S. biorefineries produce that drives economic activity in rural communities.

The U.S. bioethanol industry continues to innovate and improve its processes to be even more sustainable and productive. Corn bioethanol only requires starch from the kernel, not the protein, fat, fiber, or other micronutrients. Because of this, bioprocessing facilities are able to transform crops and crop byproducts used to produce bioethanol into other in-demand coproducts such as corn oil, high-protein animal feed, food-grade CO_2, biopolymers, and other innovative items that form a part of the bioeconomy.

Without corn bioethanol, the high-protein animal feed in the form of distillers grains would not be produced in the United States. This would result in continued demand for that corn, but without the added value of a nutrient-dense feed source like distillers grains, where the starch has been removed.

These coproducts play a vital role in the livestock and food processing sectors, indirectly contributing to the human food supply chain. Rather than diverting food resources, bioethanol production enhances agricultural efficiency by producing fuel and feed from the same crop input. During the U.S. bioethanol production process, biogenic carbon is captured for use in food processing, including for use in carbonated beverages. When bioethanol production dropped during the height of COVID in the United States, the food industry experienced significant difficulties in sourcing the food-grade CO_2 necessary for their food production; the bioethanol industry was able to help shore up their supplies, further demonstrating the industry's adaptability, and its value in supporting sectors beyond agriculture.

We welcome the opportunity to discuss these comments, the efforts we are working on, and the innovation and sustainable production of U.S. ethanol. Thank you for your consideration of these comments as you seek to develop policy on the U.K. maritime decarbonisation strategy generally, and for smaller vessels.

Sincerely,

Chris Bliley
Senior Vice President of Regulatory Affairs
Growth Energy