WORLD SHIPPING COUNCIL
PARTNERS IN TRADE

Statement of

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on

Practical Steps Toward a Carbon-Free Maritime Industry: Updates on Fuels, Ports, and Technology

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1. Introduction: The World Shipping Council and the Liner Shipping Industry

Chairman Carbajal, Ranking Member Gibbs, and Members of the Subcommittee, thank you for the invitation to testify today. My name is John Butler. I am President and CEO of the World Shipping Council[1] ("WSC" or the "Council"). WSC is a non-profit trade association whose goal is to provide a coordinated voice for the liner shipping industry in its work with policymakers, the public, and other industry groups with an interest in international transportation.

WSC members comprise an industry that has invested hundreds of billions of dollars in the vessels, equipment, and marine terminals that are in worldwide operation today. Approximately 1,200 ocean-going liner vessels, mostly containerships, make more than

[1] A complete list of WSC members and more information about the Council can be found at www.worldshipping.org.

28,000 calls at ports in the United States during a given year – almost 80 vessel calls a day. This industry provides American importers and exporters with door-to-door delivery service for almost any commodity to and from roughly 190 countries. Approximately 35 million TEU[2] of containerized cargo are currently imported into or exported from the United States each year. The container shipping industry is one of the most important facilitators of the nation's growth and ongoing economic activity. Ocean shipping is also – by far – the most fuel-efficient form of transportation on the planet.

Provided below for the subcommittee's consideration are a discussion of the industry's efforts to transition to zero or near-zero emission fuels and a description of the industry proposal to establish an International Maritime Research and Development Board (IMRB) and International Maritime Research Fund (IMRF) to accelerate the research and development work needed to create the technologies that are critical for ships to use low and zero-carbon fuels. WSC staff would welcome the opportunity to discuss these subjects further with subcommittee Members or staff.

2. Reducing Greenhouse Gas (GHG) Emissions and the Technological Challenge of Transforming the Global Fleet

The Subcommittee's interest in reducing GHG emissions shipping is indeed timely. The issue of reducing GHG emissions is today the single largest issue under consideration by the International Maritime Organization (IMO), the specialized United Nations body that regulates international shipping and in which the U.S. plays an active role.

International ocean shipping, including all sectors (container, bulk, tanker, etc.), carries over 80% of the world's international trade and generates between 2-3% of global CO_2 emissions. In 2018, the IMO adopted a resolution that set two goals for GHG reductions from shipping. The first goal is a 40% increase in overall fleet efficiency by 2030. The second goal is a 50% reduction in absolute emissions by 2050 (versus a 2008 baseline), with emissions to be reduced to zero or near zero as soon as possible after 2050.

It will likely be possible to meet the IMO's 2030 GHG goal through a combination of the mandatory 'Energy Efficiency Design Index' requirements for new ships that became effective in 2013, and new efficiency regulations covering the existing fleet that are expected to be adopted by the IMO in 2020. The existence of a highly competitive liner shipping market, the fact that fuel is the biggest variable cost for vessel operators, and increasing societal and customer requirements to reduce emissions provide vessel operators with powerful incentives to make their operations asefficient as possible and will help reach that goal.

While the IMO's 2030 GHG goal can be met by operational and design modifications applicable to a fleet that remains fossil-fuel based, the 2050 reduction goal, and the move thereafter to a zero or near-zero GHG emission status for ocean shipping, cannot be met by an industry that uses fossil fuels as its propulsion base.

In order to meet these ambitious 2050 and beyond goals, it is imperative that new

[2] A TEU is a twenty-foot equivalent unit. Most containers are 40 feet in length and equal 2 TEUs.

fuels and related propulsion, fuel storage, and fuel infrastructure systems are engineered and deployed. Moreover, the transformation in the fuels used by ocean-going vessels must begin in the near future in order for the change-over to occur in time to meet the IMO's deadlines. This is because ocean vessels have a commercial lifespan of 20-25 years, which means that investment decisions made today will be with us for a generation. Therefore, we must act now to develop new fuels and related technologies if we are to avoid locking in fossil-fuel based vessels for a period that extends beyond the 2050 target date for the most drastic GHG reductions.

The challenge the industry faces is that while there are promising possibilities for the fuels of the future, none of the candidate fuels available today can be used to power large ships serving trans-oceanic routes. Hydrogen, ammonia, and other fuels have been identified as potential replacements for fossil fuels in marine applications, but these fuels present safety, storage, handling, and production challenges that must be overcome before they are practically and safely available for widespread use. There may also be additional zero GHG emission options that have not yet received the same level of examination.

Vessels that sail across oceans must obviously carry their fuel with them, and that meansfuels must be safe to handle and carry, must be energy-dense so that they do not displace too much cargo space, and must be widely available. All of these criteria represent technical challenges that will require substantial effort and engineering expertise to resolve. The solutions to these challenges will not simply appear by themselves.

3. The Proposal for an International Maritime Research and Development Board

To address these challenges, WSC and all of the world's major shipping organizations[3] in December of 2019, submitted to the IMO a comprehensive proposal to coordinate and fund the research, development, and demonstration work necessary to decarbonize shipping. Last month, an updated version of that proposal, now also co-sponsored by ten IMO member states, was submitted to the IMO. A copy of the updated proposal, which will be discussed at the IMO's Marine Environment Protection Committee (MEPC) meeting in June 2021, is attached as Exhibit A. The proposal would set up an International Maritime Research and Development Board (IMRB) that would manage a $5-6 billion industry-funded research and development (R&D) effort over a 10 to 12-year period to identify the fuels and related technologies of the future that will be needed to meet the IMO's aggressive decarbonization goals. The shipping industry would fund this R&D effort through mandatory contributions to the International Maritime Research and Development Fund (IMRF) via a proposed per ton contribution of GHG emissions to generate approximately $500 million per year. To track GHG emissions and contributions, the IMRB and IMRF would employ a fuel oil data collection system already established by IMO.

The critical importance of this R&D effort cannot be overstated. Without this industry funding of $5-$6 billion to accelerate R&D, there is no apparent technological pathway that would allow the industry to reach the IMO 2050 and beyond GHG targets. Put simply, the

[3] See page 1 of Exhibit A for the list of co-sponsors.

research and development will not occur on its own; it requires a coordinated "push" in the form of a well-funded and comprehensive international effort.

Moreover, increased technological certainty that comes from the IMRB R&D will provide increased investment certainty as it becomes clear which near-zero and zero GHG emissions technologies will be worth investing in the long term. Creating such technologies, which provide practicable alternatives to fossil-fuel based propulsion, are also essential for market-based measures such as carbon pricing to work. Carbon pricing is designed to motivate the industry to change behavior to cleaner technologies by adding a cost to the continued use of fossil fuels. But carbon pricing can only function if alternatives to fossil fuels are practically available at commercial scale. Without such fuels and related technologies, market-based measures such as carbon pricing only add cost without reducing emissions.

The IMRB proposal is at an advanced level of development, including detailed organizational plans, a viable funding mechanism, and proposed amendments to MARPOL Annex VI to provide the legal vehicle for the program. There is no other existing proposal in the world that can deliver the necessary research and development work in the time that we have to get this work done. Any further delay in doing that work will increase technological and investment uncertainty and make the process of decarbonization more expensive, with increased risk of stranded investment. The United States' support for the IMRB proposal at the June MEPC meeting will be critical to its approval and success. We therefore encourage the U.S. Congress to urge the Administration to communicate its support for IMRB at the upcoming IMO MEPC meeting and at other international engagements on climate change.

4. Discussion of the IMRB Proposal

As mentioned above, the baseline facts that the international shipping industry faces with respect to GHG reduction may be summarized as follows:

- The 174 member countries that participate in the IMO have already set ambitiousgoals and deadlines for reductions in GHGs from shipping.

- The most ambitious of the IMO's GHG reduction targets cannot be met by a globalvessel fleet that relies primarily or even substantially on fossil fuels.

- Although there are promising fuels and related technologies that may be practicallyapplicable to trans-oceanic vessels at some point in the future, there are no low carbon or zero-carbon fuel/propulsion systems available today that can be used bylarge trans-oceanic vessels.

- Because ocean-going vessels are long-lived assets (20-25 years), we must move as quickly as possible to develop and deploy low-carbon and zero-carbon propulsion systems and fuels to avoid stranded assets and delays in implementing next generation technologies.

As the industry evaluated this set of facts, it became clear that an essential component inmeeting the IMO's deadlines for reducing GHGs from international shipping is to create and

support a dedicated research and development effort to identify and deploy practical application technologies that can replace fossil fuel propulsion for large ships. It also became apparent that, although there are a number of R&D efforts underway around the world, many of these are focused on short-sea applications or are not of a size and scale to be able to develop global solutions within the required timeline. Our focus therefore turned to the question of how the IMO could be used as the organizing body to create and sustain an R&D effort that could deliver the required solutions.

The IMO is the only body in the world that is capable of bringing together the elements that are necessary for the successful creation and maintenance of an R&D effort of the size necessary to produce results within the time required. This is the case for several reasons:

- The IMO is the only existing body with the reach to coordinate a global R&D effort focused on commercial maritime transport.

- Any global R&D effort must have a mandatory industry financial contribution mechanism in order to generate necessary funding, avoid free riders, and maintain alevel commercial playing field.

- In order to implement a sustainable funding mechanism, any effective industry-wide R&D program will need to have access to the IMO's fuel consumption database, as well as a defined communication procedure with flag states, both of which the IMO already has in place.

Once we determined that the magnitude of the challenge and the need for quick action required a substantial and sustained R&D effort to identify and develop the propulsion systems of the future, and we determined that the IMO was the right body to organize that effort, we begancrafting a proposal to the IMO that describes how this critical R&D work can be undertaken and funded. After a period of over two years during which we consulted with IMO member states, environmental groups, technical experts, academics, and other industry groups, on December 18, 2019, WSC and seven other international shipping organizations submitted to the IMO an initial proposal to create the IMRB. IMO considered this proposal and asked for comments on specific questions raised by Member States.

On March 10, 2021, WSC and ten IMO member states and industry co-sponsors submitted a detailed and expanded IMRB proposal to IMO. The revised proposal is to be considered at upcoming meetings of IMO's Marine Environmental Protection Committee (MEPC) in June and November. A copy of the March 10, 2021 submission is attached to this testimony as Exhibit A.

Boiled down to its essence, the IMRB's decarbonization R&D effort would be a global, targeted grant program funded by a mandatory contribution based on each ton of vessel GHG emissions. The IMRB proposal is detailed and addresses a number of issues regarding the purposes and management of the IMRB that will have to be considered in order for the proposed R&D structure and effort to yield the necessary results. Among the issues addressed by the proposal are:

1) R&D objectives of the IMRB;

2) Funding of the IMRB, including a structure that ensures that all funds are delivered directly to the IMRB, with no involvement of member country tax authorities;

3) Governance of the IMRB, balancing high-level IMO oversight with the need for an independent, knowledgeable board of directors and professional staff that is nimble and adaptable in deploying the assets of the IMRB to obtain effective R&D results;

4) Management of grants and contracts;

5) Provisions on conflict of interest;

6) Treatment of intellectual property generated through research efforts, balancing the need to incentivize participation by qualified experts, companies, and institutions with the need for the results of IMRB-funded research to be made broadly available in order to encourage competition in developing next-generation fuels and supporting technologies; and,

7) Dissolution of the IMRB upon completion of its work.

The IMRB proposal, if adopted by the IMO, would substantially accelerate and increase the scope of R&D work that is essential to decarbonizing shipping. That research is not occurring today on a schedule or a scale that will yield results in time to meet the schedule set by the IMO or at the speed increasingly demanded by society at large, and there is no indication that any one company or any one country would be willing or able to undertake such a research effort on its own. Luckily, we have in the IMO an existing international organization with global participation that is already deeply involved in the issue of decarbonizing shipping. All that is required in order to bring this powerful R&D tool into being is the political will to consider and adopt the IMRB proposal.

We are optimistic that, as more IMO member states understand the IMRB proposal, the more they will support it. In addition to the fact that this is the only proposal currently before the IMO that seeks to directly implement decarbonization through research and engineering solutions, making this industry-funded investment in R&D makes business and policy sense. The alternatives to finding technological solutions that allow the ocean transportation industry to ultimately eliminate its carbon emissions are to either reduce the transportation services that support world trade or to continue on a path of increasingly burdensome and low-yielding regulations of a fossil-fuel powered industry. Neither of those outcomes – artificially constraining trade or chasing ineffective regulation – is desirable. Finding non-fossil-fuel solutions will allow international ocean shipping to continue to grow to serve expanding world trade, thus providing a sustainable path for both climate and economy. It is possible to de-couple trade and GHG emissions, and for the former to grow while the latter declines.

5. The Looming Concern of European Union Unilateral GHG Regulation

Even as the IMO continues to work on global solutions, the European Union (EU) is unilaterally seeking to extend its own Emissions Trading System (ETS) to the global shipping sector by imposing extraterritorial GHG regulations on the last voyage leg into the EU, and the first voyage leg out of the EU, for all ships that arrive at or depart from EU ports[4]. The EU's GHG rules would, for example, apply to all vessels, including U.S. owned and/or flagged vessels operating within U.S. jurisdictional waters and on the high seas if those vessels also called at EU ports directly from U.S. ports.

The EU's effort is in sharp contrast to the IMO's multilateral effort and has the potential not only to upset the IMO's role as the regulator of international shipping, but also to open the door for additional nation states to impose their own unique GHG regulations on global ocean carriers that call at their ports. Such approaches would create an impossible patchwork of GHG regulations applicable to ships carrying U.S. and international commerce to jurisdictions around the globe. WSC's paper examining the potential impacts of an EU ETS is attached as Exhibit B[5]. It is therefore critical for the IMO, with its global reach, to regulate GHG emissions from international shipping, and we encourage the United States to engage with the EU to limit application of its ETS scheme to intra-EU maritime transportation and to continue to support the IMO's efforts on maritime decarbonization.

6. Conclusion

International shipping is by far the most efficient means of cargo transportation on the planet, and advances in ship design, size, and operational strategies have allowed containerships,for example, to increase their efficiency by as much as 50% over the past decade. These are impressive advances, but the fact is that over time these advances will be overtaken by trade growth, and it is not possible in the long run to reach the world's decarbonization goals for shipping by continuing to burn fossil fuels.

Because we do not yet know what specific fuels and related technologies will replace fossil fuels, the next logical step is to do the research to answer that question and to make the next generation of fuels available for commercial deployment in the world's fleet. The IMRB proposal to the IMO provides the funding and the structure to make that essential R&D work happen, and we look forward to working with the IMO member states to bring the IMRB into existence. We would welcome the active support of the United States in this vital work to reduce global shipping's impact on climate change.

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[4] European Parliament 2019-2024, Amendments adopted by the European Parliament on 16 September 2020 on the proposal for a regulation of the European Parliament and of the Council amending Regulation (EU) 2015/757 in order to take appropriate account of the global data collection system for ship fuel oil consumption data (COM(2019)0038 – C8-0043/2019 – 2019/0017(COD), (First reading) [European Parliament Amendments], available at: https://www.europarl.europa.eu/legislative-train/theme-environment-public-health-and-food-safety-envi/file-revision-of-the-eu-system-to-monitor-report-and-verify-co2-emissions-from-ships

[5] A copy of the WSC paper on the EU ETS is also available at: https://www.worldshipping.org/public-statements/regulatory-comments/WSC_EU_ETS_Discussion_Paper_10_September_2020_Final.pdf