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October 31, 2022

Dr. Caroline Good
National Marine Fisheries Service
1315 East-West Highway, 13th Floor
Silver Spring, Maryland 20910

Re: Request for Comments on Amendments to the North Atlantic Right Whale Vessel Strike Reduction Rule

Dear Dr. Good,

The National Ocean Industries Association ("NOIA") is pleased to provide these comments to the National Marine Fisheries Service ("NMFS") in response to the proposed Amendments to the North Atlantic Right Whale Vessel Strike Reduction Rule ("proposed rule") published in the Federal Register on August 1, 2022.

NOIA represents and advances a dynamic and growing offshore energy industry, providing solutions that support communities and protect our workers, the public, and our environment. For 50 years, NOIA has been committed to ensuring a strong, viable U.S. offshore energy industry capable of meeting the energy needs of our nation in an efficient and environmentally responsible manner. NOIA member companies are engaged in all facets of offshore energy development, including offshore wind, offshore oil and natural gas, and offshore carbon sequestration. Further, NOIA's members include energy developers and, just as importantly, the businesses - large and small - who do the work of building, supplying, and servicing these projects.

As an organization, NOIA strongly supports ongoing efforts to build new offshore wind resources in federal waters for meeting President Biden's goal of 30 gigawatts ("GW") of offshore wind energy by 2030. Offshore wind projects are vital to the economic growth and energy needs of this country and efforts to meet climate goals. NOIA also appreciates NMFS' efforts to protect the endangered North Atlantic right whale ("NARW"). Offshore wind development will facilitate the establishment of regional collaborations for studying and protecting the NARW, including opportunities to understand changes in their distribution over time and to monitor key environmental parameters. There will be more passive acoustic monitoring, surveys, and research that supports NARW conservation as a result of offshore wind development.

A. Executive Summary

The proposed rule, as currently structured, would impede both offshore wind development and the development of technologies that could enhance whale detection and avoidance. As elaborated below, the offshore wind industry is already regulated through project permits and consultations which account for local project conditions. These requirements should be recognized formally as an alternative means of compliance with the broader, blanket regulation that is not backed by project specific environmental review. In addition to authorizations that require Marine Mammal Protection Act ("MMPA") and Endangered Species Act ("ESA") compliance, the Bureau of Ocean Energy Management ("BOEM") and the National Oceanic and Atmospheric Administration also proposed a Draft North Atlantic Right Whale and Offshore Wind Strategy on October 21, 2022[1], further demonstrating engagement and expectations for the offshore wind industry that address potential for vessel collision, as well as approaches to support research and conservation of NARWs more generally as part of industry operations.

NOIA encourages NMFS to provide in the rule that any vessel operating with protected species observers, working under a MMPA permit, or operating with permitting that includes formal or informal consultation to address ESA compliance should be exempted from the new Seasonal Speed Zones ("SSZs") because of the requirements in permitting and consultation that reduce vessel collision potential, including mandatory adherence to vessel collision avoidance guidelines as codified in permits. This is equivalently protective to SSZs as proposed. This approach appropriately balances risk, does not penalize innovation in whale detection technologies, and leverages the vessel strike avoidance requirements that many of our members already must follow under: 1) offshore leases from BOEM; 2) construction and operations plan ("COP") approval conditions from BOEM; and 3) incidental harassment authorizations ("IHA") and/or letters of authorization from NMFS.

B. Vessel Speed in the Offshore Wind Industry is Already Regulated by Leases and Permits

A major impetus for this proposed rule is that the existing voluntary rules are not being followed. This premise does not apply to the offshore wind industry because a series of vessel strike avoidance measures are already required during *each stage* of offshore wind activity. Lease stipulations, Site Assessment Plans and COP approvals from BOEM and IHAs and/or letters of authorization from NMFS each impose vessel speed restrictions and other vessel strike avoidance measures that include mandatory compliance with what are otherwise voluntary rules for dynamic management areas.

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1 https://www.boem.gov/sites/default/files/documents/environment/BOEM_NMFS_DRAFT_NARW_OSW_Strategy.pdf

As currently proposed, this rule adds an additional layer of complexity and inconsistency by threatening to supplant those existing requirements.

Leases

NARWs are protected from offshore wind industry vessels during the offshore wind project development phase through BOEM commercial leases, which include outcomes of ESA consultation undertaken for the action of lease sales and site assessment approvals. For example, BOEM Commercial Lease OCS-A 0483 in Virginia[2] provides that Lessees must:

- Maintain a separation distance of 500 meters (1,640 ft) or greater from any sighted NARW
- Ensure the following avoidance measures are taken if a vessel comes within 500 meters of any NARW
    - If underway, any vessel must steer a course away from the NARW at 10 knots (18.5 km/h) or less until the 500 meters (1,640 ft) minimum separation distance has been established.
    - If a NARW is sighted within 100 meters (328 ft) to an underway vessel, the vessel operator must immediately reduce speed and promptly shift the engine to neutral. The vessel operator must not engage the engines until the NARW has moved beyond 100 meters (328 ft).
    - If a vessel is stationary, the vessel must not engage engines until the NARW has moved beyond 100 meters (328 ft).

Some leases even *exceed* the restrictions in the proposed rule. For example, in Commercial Lease OCS-A 0520 in Massachusetts, vessels larger than 65 feet that operate between November 1 through July 31, must operate at speeds of 10 knots or less.[3] This time period far exceeds the effective dates of the new Seasonal Management Areas ("SMAs"), now referred to by NMFS as SSZs, in the proposed rule which ranges from November 1 to May 30th in the Atlantic Zone.

Construction and Operations Approvals

Offshore wind vessels—regardless of length—must, as a term of lease or approval of construction and operations activity comply with the "voluntary" program. For example, the South Fork Wind COP Approval contains numerous vessel speed requirements for the construction and operation phases including operating at less than 10 knots in any SMA, or Dynamic Management Area ("DMA"), or visually detected

[2] *See* Section 4.1 Microsoft Word - VA LEASE FORM 052213.docx (boem.gov)
[3] *See* Section 4.1 Lease OCS-A-0520 (boem.gov)

Slow Zones.[4] The COP Approval requires reducing speeds to 10 knots or less when operating within a visually triggered Slow Zone or avoiding Slow Zones, maintaining vigilant watch for all protected species and immediately implementing strike avoidance measures if a whale is identified within 500 meters of the vessel, and provides for a full stop if a whale is sighted within 200 meters.

Incidental Harassment Authorizations

IHAs issued by NMFS, which grant developers permission to take by harassment a small number of marine mammals during pre-construction surveys, development, and construction activity, include protections specifically for NARWs. For example, the South Fork Wind IHA[5] requires year-round, daily monitoring for NARW presence, including daily monitoring of the Right Whale Sightings Advisory System, WhaleAlert app, and monitoring of Coast Guard VHF Channel 16 throughout the day to receive notifications of any sightings and/or consideration of information associated with any Slow Zones (i.e., DMAs or acoustically-triggered slow zones) to plan vessel routes to minimize the potential for co-occurrence with any NARWs. The IHA also contains strict reporting requirements regarding right whale sightings and requires submission of a NARW vessel strike avoidance plan.

Based on the foregoing, offshore wind farms are already subject to vessel speed restrictions, as well as other mitigation to avoid vessel collision with NARWs, in each phase of project development and operation through COPs, leases, and IHAs. The proposed rule, which will not supplant the need for project-specific review and approvals by BOEM and NMFS, should account for alternative compliance through project specific permits, carving out an exception for alternative compliance through offshore wind leases and permits. It is more efficient for the offshore wind industry to be regulated through project permits which account for local conditions instead of by blanket regulations.

C. The Rule Should Facilitate Use of Whale Avoidance Technology that Can Prevent Vessel Strikes Just as Effectively as Speed Restrictions

As acknowledged in the proposed rule, "whale avoidance technologies may one day play [a role] in preventing vessel collisions" and NMFS "remains open to the future application of these technologies, if proven safe and effective." But the proposed rule does not provide any pathway for future application of such technologies, if proven safe and effective. For example, it does not allow for higher speeds when no whales are detected nearby. Industry has been investing in several adaptive speed mitigation approaches beyond observers, including thermal cameras and passive acoustic

[4] *See* Section 5.6. Conditions of Construction and Operations Plan Approval Lease Number OCS-A 0517 (boem.gov)

[5] *See* Sections 4.5 and 6. Incidental Harassment Authorization (noaa.gov)

monitoring. Accordingly, we encourage NMFS to develop a regulatory regime that allows for future applications of these whale detection and avoidance technologies as a means of alternative compliance with the proposed rule.

Many discussions regarding whale avoidance technology are already occurring within the scope of project-specific reviews, which include NMFS as the key participant. Accordingly, we propose including measures in the final rule that allow for alignment with those approvals to minimize diverging outcomes. In this final rule, NMFS should not foreclosure the use of adaptive speed measures that provide a level of risk reduction at least equivalent to the vessel speed reduction measure and are envisioned by existing project approvals.[6] Developers should be empowered to collaborate on that path toward development, validation, and use of detection technologies that protect against strikes without the need to further modify the rule in the near future. The final rule should serve to foster, rather than inhibit, innovation.

D. The Proposed Rule Has Unintended Consequences in Terms of Economic, Environmental, and Energy Security Impacts, and Increases Safety Risks to Vessel Operators, Crews, and Passengers

The proposed rule significantly underestimates the economic cost of the new regulations to the offshore wind industry; the same underestimation likely holds for other maritime industries. Inflexible, non-adaptive speed restrictions and overly broad SSZ boundaries not based on real-time understanding of NARW presence will demand significant changes to offshore wind farm operations. This will result in unnecessarily increased construction and operational costs. Speed restrictions will be a large issue for many of the current offshore wind lease areas located on the outer continental shelf 10 to 25 nautical miles from shore. These leases are ideally suited to onshore based servicing with Crew Transfer Vessels ("CTV"). Limiting CTV transit speeds to 10 knots could easily double transit time between an operation and maintenance base and the wind farm and will reduce the daily maintenance time available, as an extra two or more hours of the day must be devoted to transit. Sustained periods of 10 knot transit would also present a significant safety and welfare risk to vessel crews and technicians, with 3-hour transits each way at 10-knots significantly increasing seasickness in personnel and introducing the risk that personnel would not be able to safely perform duties. For this reason, a reasonable response to 10 knot SSZs (formerly SMAs) impacting entire transit corridors would likely be to add more CTVs to ensure the maintenance schedule is maintained or pivot to a vastly more expensive offshore logistics solution, which would utilize a Service Operation Vessel ("SOV") for offshore accommodation of technicians within the wind farm area. The costs of SOVs are not factored into the economic impact assessment provided by NMFS and need to be considered.

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[6] *See* South Fork Wind Farm Conditions of COP Approval, Condition 5.6.4.2 (Jan. 18, 2022), available at https://www.boem.gov/renewable-energy/state-activities/sfwf-cop-terms-and-conditions.

While the specific cost impact resulting from such a change will vary between projects, an illustration of escalation in vessel costs can be drawn from considering a 'typical' 1 GW scale project on the outer continental shelf. In this example, an onshore (CTV-based) operations maintenance solution may typically require four CTVs, whereas an offshore (SOV-based) solution would require one CTV and one SOV. Given current daily market charter rates for CTVs and SOVs rates being about 7-8 times as much as the CTV rate, the net annual vessel cost increase for an offshore solution for a single project could be estimated in the order of $5-10 million per year.

With multiple offshore wind projects likely impacted, this would represent a significant economic impact to the offshore wind industry alone. Even assuming that only one-fifth of currently leased projects on the Atlantic OCS would switch to an offshore setup, that would likely exceed the annual economic impact currently forecast by the Draft Regulatory Impact Review ("RIR") of $46 million. Put another way, the *entire* economic impact of the rule forecasted by NOIA does not even capture the economic impact to the offshore wind industry, let alone the thousands of other maritime uses. Good agency decision making relies on good data. The RIR must be revised to reflect these and other economic impacts to the industry, including costs associated with reduced transit speeds during construction activities, survey and monitoring cost increases, vessel speed restrictions impacting the ability to resolve unscheduled faults, and cost impacts on decommissioning.

The proposed rule may also have an unintended chilling effect on the advancement of whale detection and avoidance technologies. Funds otherwise allocated for research and development for strike reductions, may be diverted towards compliance with the rule—in the form of additional vessels to account for longer transit times and shorter offshore workdays (described further below). Moreover, if there is no means for alternative compliance with the rule through demonstrated whale avoidance technology, there is less incentive for industry to continue to invest in the technology. The final rule should incentivize and reward the use of technology to better detect and protect the species.

E. The Proposed Rule Is Not Based on the Best Available Science and Creates Additional Risks to NARWs

The data suggest that low sample size, shifting distributions, and high inter-annual variability make it difficult to identify "hot spots" for the purpose of this rule-making through habitat-based density models. NARWs would likely be better protected through the dynamic speed zones (DSZs) in real-time and space than by static zones attempting to predict where they are and will be over the next decade – averages are not reflective of real-time risk, and density information used in the modeling does not reflect the best available science (see Appendix A).

Absolute density is an important factor in considering risk of vessel collision, and data from SMAs and directed studies may be more useful in identification of more refined spatiotemporal "hot spots" than application of habitat-based density mapping. NMFS could apply these types of data to long-term adaption of the rule on a periodic basis rather than trying to cover the full potential distribution pattern of NARWs over the next 10-15 years.

Similarly, vessel densities and use patterns for vessels 35-65 feet (ft) are difficult to determine because of lack of data, and vessel patterns also tend to have variability over time. Vessel densities are known to be higher at points where vessels come into shore in ports and marinas, and smaller craft will tend to be closer to shore. Thus, NMFS has information that supports the existing SMAs and if others were to be developed, they would likely be most effective in areas similar to existing SMAs – in areas where a lot of vessel traffic comes and goes into ports rather than spreading zones through the entire coast.

It is difficult to determine the speeds at which risk is genuinely high for vessels 35-65 ft. The scientific studies supporting 10 knot limits are focused on much larger vessels. Unlike container ships that can hit a whale and the captain and crew have no idea it even happened, vessels 35-65 ft in size run substantive safety risks from collisions with whales.

The statements regarding reduced sound and emissions do not seem to account for the additional time vessels will need to be on the water to complete tasks at slower speeds. In any given moment, a vessel travelling slower will be quieter and emit less, but if it spends twice as much time on the water, there are cumulative sound impacts, more overlapping sound, and potentially equivalent emissions (it depends on whether the reduction in emissions is a linear function of speed or not).

There is a trade off in risk in forcing vessels 35 ft and larger (a significant proportion of ocean-going vessels) to spend more time on the water to complete their work. The more time a vessel is at sea, the higher the collision risk as well (the vessel is available to have a collision for longer time). For industries like offshore wind, to get work done, speed limits may mean that more vessels may ultimately be needed to complete work, also expanding the numbers at sea. There is an inflection point where expanding the speed zones and the vessels included actually increases the risks because of more time spent and more vessels at sea. It is not clear exactly where that inflection point is, but the zones proposed are extensive and vessels 35 ft and larger make up a lot of sea-going traffic. This risk trade-off suggests the proposed rule may actually increase risk to NARWs, at least in many of the areas where they are in lower densities.

More detailed information to support these assertions is provided as Appendix A to this comment letter.

F. Additional Comments

DSZs are currently implemented as DMAs. There are not publicly available data on the number of DMAs that have been implemented over the last ten years or where they have been implemented. NOIA requests that NMFS provide downloadable GIS-compatible data products in a public data portal with appropriate metadata that show previous DMAs each year (and if DSZ's are implemented, provide the same for future DSZs annually) to help better understand how dynamic zones impact industry and other ocean users and improve planning.

Fifteen days seems potentially long for SSZs in areas where NARWs are migrating rather than feeding or calving, but NMFS indicates that this minimum time for DSZs is constrained by enforceability. Garrison et al. (2022) states that the expectation is that NARWs in the Mid-Atlantic and Scotian Shelf areas are expected to be travelling. Potentially, this expectation can be applied to considering the length of time for DSZs in those areas, with 15 days likely being much longer than NARW are likely to be locally static. NOIA requests that NMFS elaborate on why enforcement cannot be effective for shorter timeframe DSZs and that NMFS consider addressing these enforcement issues and using shorter times for DSZs in migration areas.

Conclusion

As President Biden has repeatedly emphasized, offshore wind is a critical tool for addressing climate change - a priority for human and marine environments. Accordingly, we encourage NMFS to adopt a rule that allows the industry to operate safely, while detecting and protecting the NARW most efficiently. We encourage NMFS to avoid overburdening the offshore wind industry and support a regulatory regime that includes alternative compliance through offshore wind leases and permits, technology, and the use of trained observers aboard vessels. We also request that the RIR be revised to reflect total costs of the rule on the offshore wind industry and that NMFS consider the best available science and the increased risks posed to NARWs and mariners from increased time on the water and increased numbers of vessels that will result from the substantive increase in speed restrictions proposed. Thank you for considering these comments.

Very respectfully,

Erik Milito
President
National Ocean Industries Association

Appendix A

The following information provides more detail on the points described in section "E" of this letter.

Right Whale Distribution and Densities

NMFS modelled the spatial distribution of NARWs using an approach that reflects the distribution of NARWs from 2010-2018 (Garrison et al. 2022[7]). It is appropriate to use multiple years to capture variability and increase sample size (rare species are generally not observed often enough to have sample sizes necessary for statistically robust modelling unless long time series are considered), but NMFS acknowledges that NARW distribution has shifted since 2010 (i.e., they cite Leiter et al. 2017 to that effect), suggesting averages across those years would not be reflective of current patterns. It is very difficult to connect species to dynamic habitat variables when there is low sample size and changing distributions, and if NMFS is attempting to predict 10-15 years into the future (as they note they expect the rule to do), that is even more difficult. NMFS also acknowledges in Garrison et al. (2022) that the model may result in positively biased densities in the mid-Atlantic region that are not realistic.

Unfortunately, there are very few NARWs. This means that the range of density values in the model will also be small. Deciding what is a "high" versus "low" density when absolute values are low is challenging, but NMFS has also not used the actual population size of NARWs in the model. NMFS says that this is not a problem because risk is relative to population size, but what constitutes a "high" density area in which there is enough likelihood that a vessel collision would occur would be affected by absolute densities as well as relative densities. If NMFS scales all the densities in the grid proportionally to achieve the total approximate population of NARWs, NMFS could then consider where absolute density is low enough that risk of overlap of vessel traffic with NARW is too low to keep that grid cell in the management area and see if that carves out more precise areas of "high" density. High and low are relative, but there should be a benchmark of density below which collision risk is considered minimal.

There is a newer model of NARW densities that was released in July 2022 by Jason Roberts and his colleagues[8]. Garrison et al. (2022) states the NMFS risk model used for the proposed rulemaking covers 2010-2018. The new Roberts et al. model includes data from 2019 and 2020. The Garrison et al. (2022) model density output for February (which is the month provided for demonstration of winter distribution in the

[7] Garrison, L.P., J. Adams, E.M. Patterson, and C.P. Good. 2022. Assessing the risk of vessel strike mortality in North Atlantic right whales along the U.S. East Coast. NOAA Technical Memorandum NMFS-SEFSC-757.
[8] https://seamap.env.duke.edu/models/Duke/EC/

report) and the Roberts et al. 2022 model for February 2011-2019 seem similar in relative densities, but the Roberts et al. 2022 output for February 2011-2020 shows a substantive difference in distribution, with highest densities mainly north of New York, suggesting the more recent data in 2020 represent enough variability in annual distribution that it changes the outcome of the long-term model (see figure below). It is also worth noting that the Roberts models do attempt to be realistic about NARW population size, so the numbers provide some context for actual numbers of whales that are predicted to be available to be involved in vessel collisions in different areas. The low sample size allows variability from one year (2020) to substantively affect the heat map of distribution. The combination of low sample size, likely shifting distribution, and inter-annual variability suggests that the most protective approach to speed limitations would be to leave the SMAs in place and continue to implement dynamic speed zones rather than additional static zones extending along the entire US East Coast. The approach to making these zones more effective would be to make them required rather than voluntary (which is proposed). Offshore Wind projects are already subject to this requirement through permitting. At the least, the only consistent "hot spots" outside of SMAs appear to be in a few areas off the New England coast (see figure below), which could inform static zones if they were to be used, bearing in mind that "red" in the Roberts model is representative of 6.3-10 North Atlantic right whales per 100 square kilometers of area, which is a low density (driven by low population size).

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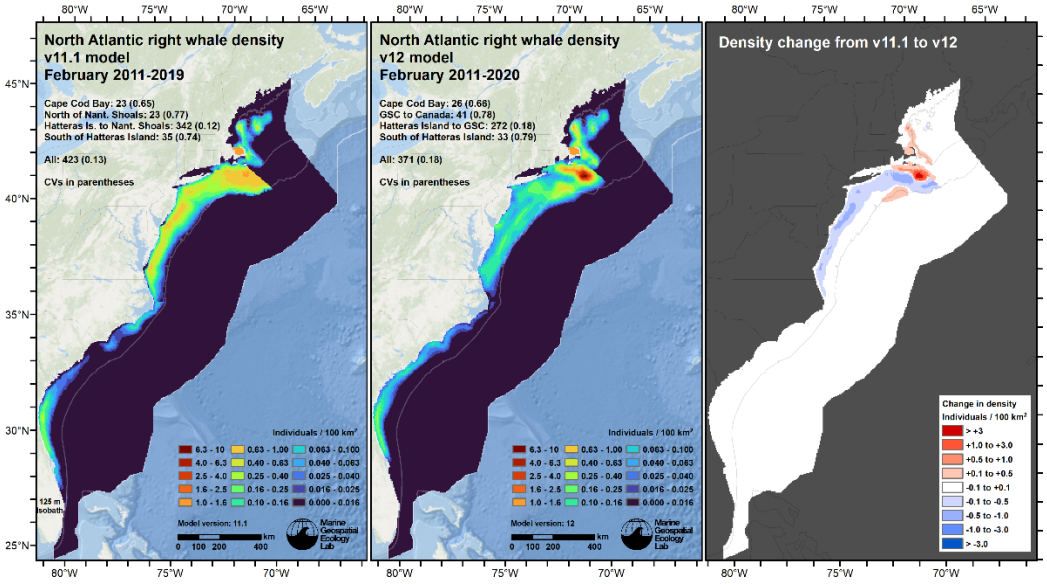

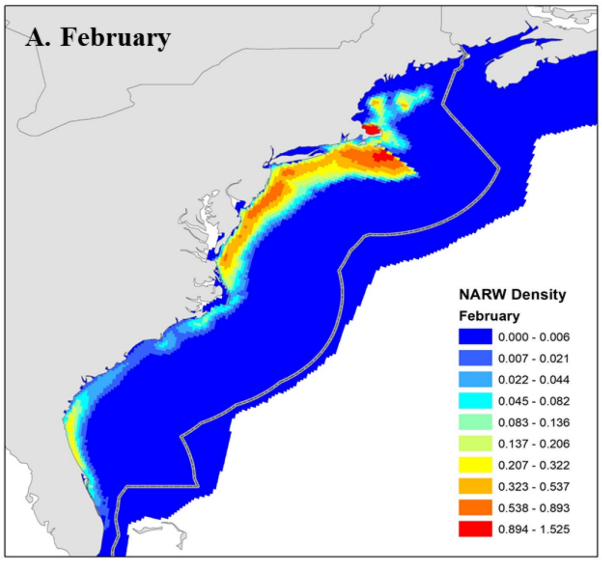

Top: Model Output from Roberts et al. 2022
Bottom: Model Output from Garrison et al. 2022 – Used by NMFS for Rulemaking (includes 2011-2018)

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The fact that right whales have been shifting their distribution is well established; however, the expansion of the mandatory speed zones to essentially encompass the entire US East Coast for large parts of the year seems to overstate where NARWs are most likely to be at risk (as noted above). NMFS states that "NMFS aimed to identify the smallest spatial and temporal footprint possible for speed restricted areas to minimize the extent of regulatory action while achieving necessary conservation goals." The geographic extent involved does not seem to support that assertion. Less than 400 whales cannot possibly be concentrated for such long periods over such large areas.

NMFS notes that in 2021, 67 DMAs were declared, with 28 of them off of Martha's Vineyard and Nantucket, which NMFS argues shows a spatial mismatch between SMAs and hot spots for NARWs. These data do seem to suggest that an SMA may be appropriate in that particular region, but it does not seem to support the concept of the entire US East Coast as a hot spot for NARWs. NMFS should consider narrowing down the geographic scope of the proposed SSZs to genuine areas of concentration of NARWs with a revisitation every five years to consider if shifts in distribution warrant additional static zones (e.g., if particular areas tend to have a large number of dynamic zones [like Martha's Vineyard did in 2021] or surveys/acoustic data suggest shifts into an area that was not used as much in the past). NMFS can expect to continue to receive data to address shifting distributions in part because the offshore wind industry will be supporting such research (as evidenced by current commitments and support). The information provided in the proposed rulemaking on the shift to offshore of Martha's Vineyard and Nantucket is a good example of how NMFS can use data from dynamic zones and studies (NMFS cites Leiter et al. 2017 study in addition to SMAs) to update the rule periodically. Updating rules periodically is standard practice in rulemaking for management, such as fisheries management by NMFS.

Vessel Densities

In addition to challenges with NARW whale density variability, densities of vessels under 35 ft are also difficult to assess, as data are lacking. Assumptions associated with their distribution matter because it is presence of vessels and presence of NARWs that are combined to assess risk of overlap and therefore, vessel collision. Garrison et al. (2022) acknowledge that the data for vessels under 35 ft are likely biased toward particular classes and that risk of vessel collision due to these vessels is not well represented in the model. Small vessel traffic is underrepresented, which means that if only relative density of traffic is being considered, "high" density areas may not be relatively higher were more information available, and without more information, an absolute benchmark would be hard to apply well, even though it is also important, just as it is for whale density.

NMFS states that "(t)he highest risk areas occurred in the Mid-Atlantic between Cape Hatteras, North Carolina, and New York, and in relatively shallow waters over the

continental shelf. High-density vessel traffic areas in approaches to major commercial ports pose the greatest risk of vessel strike mortalities." NMFS also states that "In general, the risk of interactions with vessels less than 65 ft (19.8 m) in length was higher close to shore." Thus, if speed limits are going to be applied to vessels between 35 and 65 ft, it may be more reasonable to limit the application of those limits to areas nearshore where North Atlantic right whales are commonly observed and vessel densities are higher rather than the full extent of the proposed SSZs.

Speed Limits

NMFS acknowledges that the risk of fatal collision is based on data from primarily larger vessels (more than 65 ft). Most published literature focuses on large vessels, particularly shipping vessels that are extremely large compared to most traffic, including vessels that would be associated with most offshore wind activities. NMFS provides some examples of vessels less than 35 ft colliding with whales – it is possible for any vessel to have a collision, regardless of size. The danger for the captain and crew associated with running into a whale in a vessel under 35 ft is sufficient that it could be assumed that most captains and crews are vigilant and consider the speeds they believe to be safe in areas where whales tend to occur. A container ship can run over a whale and the captain may not even know it happened – that is not the case with a 35 ft vessel.

Emissions, Noise, and Collision Risk

NMFS states the following:
"Numerous studies have linked reduced vessel transit speeds with a reduction in ocean noise (McKenna et al. 2012, 2013; Leaper et al. 2014; Gassmann et al. 2017; MacGillivray et al. 2019; Duarte et al. 2021). The proposed rule is expected to reduce radiated underwater ocean noise particularly in areas where substantial numbers of vessels would slow their speeds to 10 knots (5.1 m/s) or less. This change in speed would subsequently reduce noise disturbances, such as sound masking, for marine species occurring in overlapping areas/seasons. Additionally, for certain vessel types, the proposed rule is expected to result in reduced fuel use, and thus emissions, by slowing more vessels over a larger net spatial and temporal area compared to current conditions. NMFS anticipates these reductions would contribute to enhanced air quality, and support lower fossil fuel emissions, a priority for climate change mitigation, benefiting both human health and marine species."

This statement does not seem to account for the additional time vessels will need to spend on the water if traveling slower. For example, if a vessel would normally travel at 20 knots and it travels at 10 knots, the total time on the water doubles. That doubles the amount of time sound is entering the water even if the sound is not as loud. Likewise, doubling the time that emissions are released but having less emissions overall would mean that the emissions reduction would have to be less than half as

much emissions when running at 10 knots than at 20 knots to end up with less emissions. It is not clear from NMFS' statement if they are accounting for this additional time or simply stating the slower vessels are potentially quieter and use less fuel in any given moment on the water.

The additional time spent on the water also would contribute to some additional risk of collision (presence increases risk) and risk of other impacts associated with vessel presence. There is a trade-off here. The application of this trade off to large vessels seems like it has some merit in reducing lethal vessel collision, particularly for extremely large vessels like those used in shipping. The data are much less clear on whether reduced speeds for smaller vessels will reduce the likelihood of lethal collisions to an extent that offsets the increased potential impacts of vessels on the water for twice as long or more, depending on the difference in typical speed versus operating at less than 10 knots within the designated zones and seasons. If vessels need more time to complete work, they will spend more time at sea or more vessels will be built and added to traffic to meet the ocean economy's needs, creating an alternative risk rather than alleviating risk.