itp Potlock - NOAA Service Account <itp.potlock@noaa.gov>

Fwd: urgent killing sea creatures off nj for wind towers

1 message

jean public <jeanpublic1@gmail.com> Thu, Sep 29, 2022 at 4:08 PM
To: itp.potlock@noaa.gov, info@peta.org, info@idausa.org, info@mercyforanimals.org, anonymousforthevoiceless@gmail.com, madraven@gmail.com
Cc: info@aldf.org

-public commetn on federal register

no permit shojuld be given to this applicants. they are proposing to kill any kind of marine mammal or fish that interferes with their work for 5 years. that is a horrific killing time period that is out of control and is inhumane and abusve., there is no jusitication for this killing spree of marine life. we are killing our oceans. it has no reason for being or for application. shu tit down. no permit should be given.this commetn is for the public recor.d please receipt. jeanpubliee
jeanpublic1@gmail.com

[Federal Register Volume 87, Number 188 (Thursday, September 29, 2022)]
[Notices]
[Pages 59061-59062]
From the Federal Register Online via the Government Publishing Office [www.gpo.gov]
[FR Doc No: 2022-21104]

[[Page 59061]]

DEPARTMENT OF COMMERCE

National Oceanic and Atmospheric Administration

RIN 0648-XC092

Taking and Importing Marine Mammals; Taking Marine Mammals
Incidental to the Atlantic Shores Offshore Wind Energy Projects
Offshore of New Jersey

AGENCY: National Marine Fisheries Service (NMFS), National Oceanic and
Atmospheric Administration (NOAA), Commerce.

ACTION: Notice; receipt of application for Letters of Authorization;
request for comments and information.

SUMMARY: NMFS has received a request from Atlantic Shores Offshore
Wind, LLC (Atlantic Shores) for authorization to take small numbers of
marine mammals incidental to activities associated with two offshore
wind energy projects in the Bureau of Ocean Energy Management's (BOEM)
Lease Area Outer Continental Shelf (OCS)-A-0499 off of New Jersey over
the course of 5 years beginning on January 1, 2025. Pursuant to
regulations implementing the Marine Mammal Protection Act (MMPA), NMFS
is announcing receipt of Atlantic Shores' request for the development

and implementation of regulations governing the incidental taking of marine mammals and associated Letters of Authorization (LOAs). NMFS invites the public to provide information, suggestions, and comments on Atlantic Shores' application and request.

DATES: Comments and information must be received no later than October 31, 2022.

ADDRESSES: Comments on the applications should be addressed to Jolie Harrison, Chief, Permits and Conservation Division, Office of Protected Resources, National Marine Fisheries Service. Physical comments should be sent to 1315 East-West Highway, Silver Spring, MD 20910 and electronic comments should be sent to ITP.Potlock@noaa.gov.

Instructions: NMFS is not responsible for comments sent by any other method, to any other address or individual, or received after the end of the comment period. Comments received electronically, including all attachments, must not exceed a 25-megabyte file size. Attachments to electronic comments will be accepted in Microsoft Word or Excel or Adobe PDF file formats only. All comments received are a part of the public record and will generally be posted online at

https://www.fisheries.noaa.gov/permit/incidental-take-authorizations-under-marine-mammal-protection-act without change. All personal identifying information (e.g., name, address) voluntarily submitted by the commenter may be publicly accessible. Do not submit confidential business information or otherwise sensitive or protected information.

FOR FURTHER INFORMATION CONTACT: Kelsey Potlock, Office of Protected Resources, NMFS, (301) 427-8401. An electronic copy of Atlantic Shores' application may be obtained online at: Incidental Take Authorizations Under the Marine Mammal Protection Act. In case of problems accessing these documents, please call the contact listed above.

SUPPLEMENTARY INFORMATION:

Background

Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 et seq.) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations

are issued or, if
the taking is limited to harassment, a notice of a proposed
authorization is provided to the public for review.
    An incidental take authorization shall be granted if NMFS finds
that the taking will have a negligible impact on the species or
stock(s), will not have an unmitigable adverse impact on the
availability of the species or stock(s) for subsistence uses (where
relevant), and if the permissible methods of taking and requirements
pertaining to the mitigation, monitoring and reporting of such takings
are set forth.
    NMFS has defined ``negligible impact'' in 50 CFR 216.103 as an
impact resulting from the specified activity that cannot be reasonably
expected to, and is not reasonably likely to, adversely affect the
species or stock through effects on annual rates of recruitment or
survival.
    The MMPA states that the term ``take'' means to harass, hunt,
capture, kill or attempt to harass, hunt, capture, or kill any marine
mammal.
    Except with respect to certain activities not pertinent here, the
MMPA defines ``harassment'' as: any act of pursuit, torment, or

annoyance, which (i) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (ii) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment).

Summary of Request

On February 28, 2022, NMFS received an application from Atlantic Shores requesting authorization to take marine mammals incidental to construction activities associated with two offshore wind energy projects (referred to as Project 1 and Project 2 in the application) in the Lease Area OCS-A-0499 off of New Jersey. In response to our comments, and following extensive information exchanges with NMFS, Atlantic Shores submitted a revised application on August 12, 2022, that we determined was adequate and complete on August 25, 2022. The requested regulations would be valid for 5 years, from January 1, 2025 through December 31, 2029.

Atlantic Shores plans to conduct construction activities for

Projects 1 and 2 that consist of the following: impact installation of wind turbine generator (WTG) and offshore substation (OSS) foundations (consisting of either monopile or jacket foundations); site characterization surveys; impact installation of a permanent meteorological (met) tower; deployment of metocean buoys; placement of scour protection; the installation of eight export cables via trenching, laying, and burial; and vibratory pile driving to temporarily install and remove sheet pile cofferdams at two cable landfall sites. Vessels will be used to transport crew, supplies, and materials to the project area and to support construction activities.

Atlantic Shores may also conduct fisheries surveys during the effective period of the requested regulations, as required by BOEM. Atlantic Shores has indicated no unexploded ordinance/munitions and explosives of concern (UXO/MEC) detonations would occur during the effective period of the regulations and has not included this activity as part of the specified activities. A subset of the specified activities included in the application (i.e., installing piles using impact and vibratory pile driving and site characterization surveys) may

result in the
incidental take, by Level A harassment and/or Level B harassment, of
marine mammals. Therefore, Atlantic Shores requests authorization to
incidentally take marine mammals.

Specified Activities

In Executive Order 14008, President Biden stated that it is the
policy of the

[[Page 59062]]

United States to organize and deploy the full capacity of its agencies
to combat the climate crisis to implement a Government-wide approach
that reduces climate pollution in every sector of the economy;
increases resilience to the impacts of climate change; protects public
health; conserves our lands, waters, and biodiversity; delivers
environmental justice; and spurs well-paying union jobs and economic
growth, especially through innovation, commercialization, and
deployment of clean energy technologies and infrastructure.

Through a competitive leasing process under 30 CFR 585.211,
Atlantic Shores was award Commercial Lease OCS-A 0499, located offshore

of New Jersey in the New Jersey Wind Energy Area and has the exclusive rights to submit a construction and operations plan (COP) for activities within the lease area. Atlantic Shores has submitted a COP to BOEM proposing the construction, operation, maintenance, and conceptual decommissioning of Project 1 and Project 2, collectively generating 1,510 megawatts (MW) of clean energy. Combined, these projects will have a maximum of 200 WTGs, 10 OSSs, 1 meteorological tower, and 8 transmission cables making landfall at 2 locations in Atlantic and Monmouth Counties.

Atlantic Shores anticipates that activities potentially resulting in the take of marine mammals could occur during the life of the requested regulations and associated 5-year Letters of Authorization (LOAs). Specifically, these activities are:

The installation, via impact pile driving, of up to 200 WTGs utilizing either monopile (up to 15-meter (m) in diameter) or jacket foundations (up to 5-m in diameter pin piles). Project 1 would be comprised of 105-111 foundations and Project 2 would be comprised of 89-95 foundations;

The installation, via impact driving, of up to 10 OSSs

using up to jacket foundations comprised of 5-m pin piles (with 5 OSSs
allocated to each project);
Construction-related high-resolution site assessment
geophysical surveys utilizing acoustic sources with frequencies of <180
kilohertz (kHz) for up to 300 days (estimate of 60 days annually)
during all 5 years;
The installation, via impact driving, of one permanent met
tower in Project 1 using either a monopile up to 15-m in diameter or a
jacket foundation using up to 5-m pin piles; and
The installation and removal, via vibratory driving, of up
to eight temporary steel sheet pile cofferdams at the Atlantic cable
landfall site (Project 1) and the Monmouth cable landfall site (Project
2).

Information Solicited

Interested persons may submit information, suggestions, and
comments concerning Atlantic Shores' request (see ADDRESSES). NMFS will
consider all information, suggestions, and comments related to the
request during the development of proposed regulations governing the
incidental taking of marine mammals by Atlantic Shores, if appropriate.

Dated: September 23, 2022.
Kimberly Damon-Randall,
Director, Office of Protected Resources, National Marine Fisheries
Service.
[FR Doc. 2022-21104 Filed 9-28-22; 8:45 am]
BILLING CODE 3510-22-P

Incidental Take Authorizations Under the Marine Mammal Protection Act

The MMPA requires that an incidental take authorization be obtained for the unintentional “take” of marine mamma...

itp Potlock - NOAA Service Account <itp.potlock@noaa.gov>

Atlantic Shores Notice RIN 0648–XC092

Dan Ginolfi <Dan.Ginolfi@warwickconsultants.net> Fri, Sep 30, 2022 at 11:52 AM
To: "jolie.harrison@noaa.gov" <jolie.harrison@noaa.gov>
Cc: "ITP.Potlock@noaa.gov" <ITP.Potlock@noaa.gov>

Hi Jolie,

RE: **Taking and Importing Marine**

Mammals; Taking Marine Mammals

Incidental to the Atlantic Shores

Offshore Wind Energy Projects

Offshore of New Jersey

RIN 0648–XC092

Could you please include in the federal register a full list of the anticipated species to be harassed and taken, estimates of the numbers taken, the science and data on the safety of the equipment used, how it will not damage hearing of marine species, any other marine species impacts that are known, and how the operator will perform best management practices to prevent harm to marine species. It seems that this notice has far less detail than others that I have seen for other projects. Specifically, survey vessel notices have been far more informative than this notice.

Thank you

Best,

Dan Ginolfi | Senior Public Policy Advisor

Warwick Group Consultants, LLC

www.warwickconsultants.net
5425 Wisconsin Ave, Suite 600

Chevy Chase, MD 20815

(202) 787-5770

itp Potlock - NOAA Service Account <itp.potlock@noaa.gov>

Fw: ENVIRONMENTAL REVIEW (ER) NEW POSTING NOTIFICATION: ER22/0419 - Taking Marine Mammals Incidental to the Atlantic Shores Offshore Wind Energy Projects Offshore of New Jersey

1 message

Kopec, Brett A <bkopec@usgs.gov> Sat, Oct 1, 2022 at 9:41 AM
To: "ITP.Potlock@noaa.gov" <ITP.Potlock@noaa.gov>
Cc: "Janowicz, Jon A" <jjanowicz@usgs.gov>

Brett Kopec
USGS
Administrative Operations Assistant

From: Gordon, Alison D <agordon@usgs.gov>
Sent: Friday, September 30, 2022 7:43 PM
To: Kopec, Brett A <bkopec@usgs.gov>
Cc: Janowicz, Jon A <jjanowicz@usgs.gov>
Subject: Fw: ENVIRONMENTAL REVIEW (ER) NEW POSTING NOTIFICATION: ER22/0419 - Taking Marine Mammals Incidental to the Atlantic Shores Offshore Wind Energy Projects Offshore of New Jersey

The USGS has no comment at this time. Thank you.

From: oepchq@ios.doi.gov <oepchq@ios.doi.gov>
Sent: Thursday, September 29, 2022 8:07 AM
To: Alam, Shawn K <Shawn_Alam@ios.doi.gov>; Braegelmann, Carol <carol_braegelmann@ios.doi.gov>; Kelly, Cheryl L <cheryl_kelly@ios.doi.gov>; Hathaway, Ryan S <ryan_hathaway@ios.doi.gov>; Yazzie, Harrilene J <Harrilene.Yazzie@bia.gov>; Wilson, Wenona B <wenona.wilson@bia.gov>; ERs, FWS HQ <FWS_HQ_ERs@fws.gov>; Runkel, Roxanne <Roxanne_Runkel@nps.gov>; Stedeford, Melissa <Melissa_Stedeford@nps.gov>; Gordon, Alison D <agordon@usgs.gov>; Janowicz, Jon A <jjanowicz@usgs.gov>; McGhee, Chester <Chester.Mcghee@bia.gov>; oepchq@ios.doi.gov <oepchq@ios.doi.gov>; Raddant, Andrew <Andrew_Raddant@ios.doi.gov>; Lazinsky, Diane <Diane_Lazinsky@ios.doi.gov>
Subject: ENVIRONMENTAL REVIEW (ER) NEW POSTING NOTIFICATION: ER22/0419 - Taking Marine Mammals Incidental to the Atlantic Shores Offshore Wind Energy Projects Offshore of New Jersey

This e-mail alerts you to a Environmental Review (ER) request from the Office of Environmental Policy and Compliance (OEPC). This ER can be accessed here.

To access electronic ERs visit the Environmental Assignments website: https://ecl.doi.gov/ERs.cfm. For assistance, please contact the Environmental Review Team at 202-208-5464.

Comments due to Agency by: 10/31/22

itp Potlock - NOAA Service Account <itp.potlock@noaa.gov>

Take Application , Wind Energy Projects Offshore of New Jersey

Bob Stern <drbob232@gmail.com> Wed, Nov 9, 2022 at 7:45 AM
To: itp Potlock - NOAA Service Account <ITP.Potlock@noaa.gov>
Cc: Benjamin Freidman <benjamin.freidman@noaa.gov>, Janet Coit <Janet.Coit@noaa.gov>, Karen Baker <Karen.Baker@boem.gov>, David Hubbard <dhubbard@gdandb.com>

To: The National Marine Fisheries Service (NMFS)

Regarding: The National Oceanic and Atmospheric Administration RIN 0648—XC092, Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to the Atlantic Shores Offshore Wind Energy Projects Offshore of New Jersey.

The comments and recommendations from Save Long Beach Island (LBI), Inc. on the Notice of Receipt and the Atlantic Shores Projects Application for a Marine Mammal Protection Act (MMPA) Take Authorization through a rulemaking and Letters of Authorization are attached.

Our comments are structured as a cover letter on the Application material presented, with three Enclosures. The significant impacts from, and the need to address turbine operational noise impacts, in any rulemaking are presented in Enclosures I and II. The need to address vessel survey impacts with a different methodology than currently used to estimate noise impacts is presented in Enclosure III.

Our comments are lengthy and raise many issues; including the narrow scope and completeness of the Application, the assumptions being made regarding pile driving noise source attenuation, the methodology being used to estimate noise transmission loss, and the plan for monitoring and mitigation. They suggest that major revisions to the Application, or a new Technical Support Document would be needed before proceeding to a proposed rule, and we ask for an opportunity to comment on such changes before that.

More fundamentally, given the turbine numbers, size, drive type, noise source levels, and the close proximity-and even some intersection with-the primary migration corridor of the critically endangered North Atlantic right whale, we would contend that any finding of negligible impact would simply not be credible, and that the only way to make this project possibly compatible with the MMPA is a change in the proposed project itself. We recommend that the NMFS pursue that with the lead agency and the applicant before it proceeds.

We appreciate the time extension offered by the NMFS for us to prepare our comments, and the assistance provided in securing certain documents.

If there are any questions regarding the data or calculations in our comments, please feel free to email or call me on 917.952.5016. Please also confirm receipt, thank you.

Bob Stern, President
Save LBI Inc.

4 attachments

ITAApplicationSaveLBIComment Letter.docx
109K

ITAApplicationSaveLBIEnclosureITurbineOperationSummary.pptx
3327K

ITAApplicationSaveLBIEnclosureIITurbineOperation.docx
8013K

ITAApplicationSaveLBIEnclosureIIIVesselSurveys.docx
5099K

Save Long Beach Island, Inc.
P.O. Box 579, Ship Bottom, NJ 08008
www.SAVELBI.org

Jolie Harrison, Chief, Permits and Conservation Division November 9, 2022
Office of Protected Resources,
National Marine Fisheries Service (NMFS)
1315 East-West Highway, Silver Spring, MD 20910
Electronic comments to ITP.PotIock@noaa.gov.

Comments by Save Long Beach Island, Inc. on the National Oceanic and Atmospheric Administration RIN 0648—XC092, Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to the Atlantic Shores Offshore Wind Energy Projects Offshore of New Jersey, Federal Register Notice, Vol. 87, No. 188, Thursday, September 29, 2022

Dear Ms. Harrison,

These comments on the Notice of Receipt and Availability (NOA) of the Atlantic Shores Offshore Wind Application for Incidental Take Authorization (the "Application") for construction and related activities are submitted on behalf of Save Long Beach Island Inc. a non-profit organization of over four thousand residents, businesses and visitors to the Island. We are not, in general, opposed to offshore wind energy but do seek that wherever it is pursued that it be done sensibly without causing significant collateral damage, and in full compliance with applicable environmental law, including the Marine Mammal Protection Act (MMPA).

Our comments below are focused on the material that is presented in the Application itself, which is mainly construction related pile-driving and pre-construction vessel surveys. However, we would point out at the outset that although the title of the Notice refers to Incidental Taking for the Atlantic Shores project that is not the full project. The full project should include other survey activities being conducted or planned by the Atlantic Shores company, wind turbine operation and to some extent, decommissioning.

The comments are structured with a cover letter on the application material and pointing out those missing elements. We hope to have the opportunity to review and comment on those missing elements before the NMFS proceeds to any proposed rule. The significant impacts from and need for addressing turbine operational noise impacts is presented in Enclosures I and II. The need for a different methodology regarding vessel survey noise impacts is presented in Enclosure III.

Our concern that vessel survey impacts are not being estimated properly has been heightened by the recent observations of an unusual number of fin and humpback whales close to shore which may be correlated with ongoing survey activities. We

have asked the New Jersey Department of Environmental Protection to investigate this, and we urge the National Marine Fisheries Service (NMFS) to do the same.

The applicant and its contractors, through a series of undisclosed and/or technically unsupported noise source levels, noise source attenuation assumptions, noise propagation and transmission loss models, and animal aversion models have made a valiant attempt to demonstrate a negligible impact from this project on the critically endangered North Atlantic right whale (henceforth the "right whale"), and other marine mammals.

We provide extensive technical comments below on all these issues, but more fundamentally contend that NMFS cannot credibly conclude that surveying thousands of acres with high intensity noise devices, driving three hundred and fifty-seven 12 to 15-meter diameter piles into the seabed, and the long-term operation of 357 15-megawatt, gearbox turbines (which should be added to the scope of any rulemaking), each turbine with a noise source level of at least 180 decibels (dB), will have a negligible impact on a critically endangered whale attempting to migrate through the area. Proceeding to a rulemaking with such an incredulous proposal will have far-reaching implications regarding the strength of the MMPA, how it is being administered, and on the credibility and reputation of the NMFS.

The only way to make this project remotely compatible with the MMPA is to change the project itself, and we recommend that NMFS pursue that path with the Interior Department and the applicant, before attempting a rule-making.

Also, as shown here, we believe that the Application is not complete and does not meet MMPA requirements and its Incidental Take Authorization (ITA)-related rules, the National Environmental Policy Act (NEPA), or the Endangered Species Act (ESA). The application should be revised and resubmitted before any rulemaking proceeds. If a rulemaking proceeds substantial changes in scope and methodology would be required for a proposed rule.

Acknowledgement of the North Atlantic right whale's Primary Migration Corridor. We are glad to see that Figure 9 of the main application recognizes that the primary migration corridor of the right whale intersects and/or is adjacent to the proposed wind turbine areas (See Exhibits B1, B2, and B3 in Enclosure II).

Restricted Construction Period. We are also glad to see that pile driving and related construction activities will not take place in January through April during the main period of the right whale's migration. We recommend however that the restricted time period also include December as there is still significant whale presence then.

At the same time, since the NMFS has declined our suggestion that high resolution geophysical (HRG) vessel surveys be scheduled to be conducted outside the right whale's primary migration corridor during December through April, we see no logical reason why all vessel survey activity shouldn't be suspended during those

months as well, similar to that being done for construction, and now recommend that.

Incomplete Application. The Federal Register notice says that NMFS determined that the Atlantic Shores application was adequate and complete on August 25, 2022. We would suggest that NMFS reconsider that finding. The Application is not complete for the following reasons:

1. Limited Project Scope, Turbine Number, Power and Drive Type. The full Atlantic Shores project would consist of 357 turbines from projects 1, 2 and 3, not, as the Application indicates, just 200 turbines from projects 1 and 2. The Construction and Operations Plan (COP) for project 3 was submitted in April, 2022, using similar turbines and layouts, leaving ample time to include it here. In addition, the expected operating power and drive of the turbines is not disclosed and should be as this has a significant bearing on operational noise impacts as discussed below. The project has selected the Vesta-236 15-megawatt turbine and that and its specifications should be disclosed.

2. Limited Impact Scope. The application is not complete because it does not present the noise impacts of turbine operation, and operation is part of the COP being considered for approval by the lead agency- The Bureau of Ocean Energy Management (BOEM). As explained in Enclosures I and II, the impacts of operational noise from the project's 15-megawatt Vesta-236 gearbox drive turbines are significant and could interfere with and potentially block the essential migration of the right whale. They must be considered in this ITA review, and other ITA reviews with the same problem. In addition, the cumulative impact on the whale's full migratory path needs to be assessed in each project EIS with the same problem-see also NEPA Compliance and Coordination below.

3. Undisclosed Noise Source Levels and Very High Unexplained Noise Transmission Loss Rates. Regarding construction-related noise, the Application is technically incomplete because it does not present critical data necessary to assess whether the modeled calculations used in the application are scientifically valid, specifically the noise source levels for the sound pressure levels (SPLs) and sound exposure levels (SEL's), and the noise transmission loss factors (LFs).

The exposure range (R) for injury and behavior disruption varies exponentially: with the noise source level (SL) directly, and inversely with the noise transmission loss factor (LF).

$$R = 10^{(SL - Threshold\ dB)/LF}$$

Based on trends of increasing noise source level with pile diameter, the SLs for driving these piles could be very large, well above 250 dB. The Application does not disclose the LF's being used, but we have estimated them (see below) based on the exposure ranges and attenuation numbers in the Application. They are very high, inconsistent with factors used elsewhere by the NMFS and other researchers, and therefore not justified.

Because of the exponential relationship, even modest changes in the SL or the LF can make a large difference in the exposure range and subsequent take estimates. For example, using the above equation for impulsive noise with a source level of 220 dB, the exposure range would be just 32 meters with the Application's transmission loss factor of 40 dB that we found. This loss factor is extremely high however, and deviates significantly from standard. With a more common and defensible loss factor of 15 dB, the exposure range would increase to 10,000 meters; more than 300 times larger.

These two numbers, the SL and the LF, are arguably the two most important pieces of information to have in order to determine whether much of the rest of the Application is scientifically sound. But neither is disclosed. These numbers and factors must be disclosed and fully explained if this exercise is to be technically and scientifically legitimate.

Without this critical data, distances to meet criteria (exposure ranges) and animal takes cannot be reviewed for consistency with mainstream scientific practices, nor can uncertainties in those calculations be addressed. Put more directly the analysis and calculations being done are not disclosed. This is a particular problem in the calculation of exposure ranges as presented just below.

4. Unexplained High Noise Dissipation. Regarding construction-related noise, the Application does not disclose or present any rationale to justify the extremely high noise transmission loss upon which its exposure range and take estimates are based. As discussed below, those transmission losses are not consistent with those normally used in the scientific community for the modest water depths encountered here.

These inconsistencies arise from the exposure ranges in Tables 20 through 23 required to meet the impulsive noise Level B criteria of 160 dB. The cumulative frequency noise source level is not given, thus making it impossible to perform a direct calculation of a noise loss factor. However, by comparing the exposure ranges for the 15 dB attenuation to no attenuation for the Level B exposures, one can see that an additional 15 dB of noise loss is being achieved with an approximate doubling of the required distance.

That 15 dB loss is far greater than even the loss with spherical noise spreading which would achieve a 6 dB decrease with a doubling of distance. And even a 6 dB loss is not expected to occur beyond distances equal to the relatively modest depths encountered here.

A 15 dB doubling distance loss is substantially larger than the 4.5 dB reduction for the doubling distance for the "practical" spreading used by the MMFS and the Bureau of Ocean Energy Management (BOEM) in many other similar circumstances as shown below and in Enclosure III. It is far greater than the 3 dB reduction for cylindrical spreading for a doubling of distance, which would be expected further away from the source.

Assuming the absorption loss is small at lower frequencies, the equation describing the noise loss from the source to the receiver is,

Source Level (SL)-160 dB=Noise Transmission Loss Factor (LF) x $\log_{10}$(Exposure Range)

That equation can be used to solve for SL and LF using the exposure ranges for noise source attenuations of 0 and 15 dB (which changes the Source Level by 15 dB) in Table 20 for the right whale for behavior disturbance with the NOAA RLp50 criteria. That yields a noise transmission loss factor, TL, of 43 dB for every 10-fold increase in distance. This is much larger than the 15 dB and 10 dB loss factors for practical and cylindrical spreading respectively for a ten-fold increase in distance.

A 40 dB reduction for a tenfold distance increase close to that is also shown in Table F-1 in the Low Frequency Cetacean (LFC) 95% column as the noise level decreases from 160 dB at 1.47 kilometers (km) to 120 dB at 15.78 km. This seems especially unusual as those distances are many times the water depth where one might expect dissipation following cylindrical spreading closer to a 10 dB loss factor.

The dissipation for sound pressure level (SPL), e.g., in Table F-41 is equally puzzling. For shorter distances from the source, less than 2 km, it shows dB reductions less than 20 dB per tenfold increase in distance. But for greater distances, e.g., 2 km to 20 km it shows again the much larger reduction, more than 45 dB per decade. Using Equation 4.4 in the well-respected book by John Richardson and others titled Marine Mammals and Noise for absorption loss, those losses at frequencies less than 2 kHz should be small, less than a few dB.

Since absorption loss should be small at these low frequencies, and it is difficult to see what physical characteristics of the area or noise propagation constructs could account for such a large noise transmission rate, well beyond even spherical spreading.

Such a large noise transmission loss factor is not consistent with the NMFS approach used and described fully as "common practice" for coastal waters in the NMFS's ITA rulemaking of December 15, 2021 titled, Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to U.S. Navy Construction at Naval Station Newport in Newport, Rhode Island. In that rulemaking document, NMFS stated that,

"SOUND PROPAGATION. Transmission loss (TL) is the decrease in acoustic intensity as an acoustic pressure wave propagates out from a source. TL parameters vary with frequency, temperature, sea conditions, current, source and receiver depth, water depth, water chemistry, and bottom composition and topography. The general formula for underwater TL is

$$TL = B * \log_{10} (R_1 / R_2),$$

Where

B = transmission loss coefficient (assumed to be 15)
R_1 = the distance of the modeled SPL from the driven pile, and
R_2 = the distance from the driven pile of the initial measurement.

This formula neglects loss due to scattering and absorption, which is assumed to be zero here. The degree to which underwater sound propagates away from a sound source is dependent on a variety of factors, most notably the water bathymetry and presence or absence of reflective or absorptive conditions, including in-water structures and sediments. Spherical spreading occurs in a perfectly unobstructed (free-field) environment not limited by depth or water surface, resulting in a 6 dB reduction in sound level for each doubling of distance from the source (20*log(range)).

Cylindrical spreading occurs in an environment in which sound propagation is bounded by the water surface and sea bottom, resulting in a reduction of 3 dB in sound level for each doubling of distance from the source (10*log(range)).

As is common practice in coastal waters, here we assume practical spreading (4.5 dB reduction in sound level for each doubling of distance). Practical spreading is a compromise that is often used under conditions where water depth increases as the receiver moves away from the shoreline, resulting in an expected propagation environment that would lie between spherical and cylindrical spreading loss conditions. Practical spreading was used to determine sound propagation for this project".

Bold emphasis added. Note also that a 4.5 dB doubling distance is equivalent to using a 15 dB loss factor, "B", and in the equation above and R_1 is one meter (m)**.**

Applying a 40-43 dB loss factor is not consistent with the 15 dB loss factor presented above that was used by NMFS in approving a request from its parent agency, the National Oceanic and Atmospheric Administration (NOAA), for authorization to take marine mammals incidental to the NOAA port facility project in Ketchikan, Alaska as recently as December 1, 2021.

Regarding the Navy construction at Newport, Rhode Island and the NOAA construction in Ketchikan, Alaska, the NMFS says in its response to our comments on the Ocean Wind and Atlantic Shores surveys that these activities are not relevant to the noise surveys at hand because they occur in less than 10 m depths. The depths at hand are often about twice that (See Enclosure III, Exhibit B), but that is not enough to significantly affect the decibel acoustics.

The NMFS also states that the pile driving activity associated with those projects produces sound with higher frequency and shorter wavelengths than the noise sources being employed here-making them more amenable to the 15 dB factor. While pile driving activities do produce some noise energy at higher frequencies about 75 percent of the noise spectrum is still below the two-thousand Hz frequency level which is of interest here. That is shown in a report done by Jasco

Applied Sciences of July 21, 2017 titled Acoustic Modeling Study of Underwater Sound Levels from marine pile driving in southeast Alaska, which contains results specifically for the Ketchikan facility (See Figures 1 through 5 on page 12 and Figure 10 on page 17). Therefore, that approval is relevant to the noise surveys here.

The 30-inch diameter piles modeled in that study (Table 1) are also similar to those used in the Naval construction action in Newport, Rhode Island (See Table 2 of the Federal Register notice of October 13, 2021 titled Take of Marine Mammals Incidental to Specified Activities; taking marine mammals incidental to U.S. Navy construction at Naval Station Newport in Newport Rhode Island). Therefore, that approval is relevant to the noise surveys here.

In its response to comments on the Ocean Wind and Atlantic Shores surveys (FR Notice, Vol. 87, No. 93, May 13, 2022) the NMFS states that the wave length of the sound emitted relative to the water depth should be considered in determining these transitions. It states that for sounds in the thousands of hertz (cycle per second) range, the wave length is short and spherical spreading could extend further. That is correct if the relevant wave length (sound speed /frequency) is much smaller than the water depth.

But here with respect to the right whale, we are interested in frequencies less than 1000 hertz (Hz) which are thought to be its primary hearing range (See Parks, SE, Clark CW. 2007. Acoustic communication: Social sounds and the potential impacts of noise. In: Kraus SD, Rolland R, editors. The Urban Whale: North Atlantic Right Whales at the Crossroads. Cambridge, Massachusetts: Harvard University Press. p. 310-332).

Further, based on analysis of vocalizations the right whale's estimated band of maximum hearing sensitivity is 100 to 400 Hz (See Short- and long-term changes in right whale calling behavior: The potential effects of noise on acoustic communication. The Journal of the Acoustical Society of America 122, 3725 (2007), Susan E. Parks and C. W. Clark.

For the highest frequency in that range (shortest wave length) the wave length would be about 1700 meters per second (sound speed in water) divided by 400 cycles per second or 4.25 meters, which is not small relative to water depths less than 15 meters. Therefore, wavelength is not a major factor here as regards the right whale and the use of the appropriate 15 dB noise loss factor.

The use of a 40-43 dB factor here is not consistent with the 15 dB factor NMFS used very recently on February 8, 2022 to justify the "Taking of Marine Mammals Incidental to Kitty Hawk Wind Marine Site Characterization Surveys, North Carolina and Virginia" which used similar sound survey devices.

The use of a 40-43 dB factor here is not consistent with the Bureau of Ocean Energy Management's (BOEM's) cited factor of 15 dB for use in the Practical Spreading Loss Model for pile driving in its report titled, A Parametric Analysis and

Sensitivity Study of the Acoustic Propagation for Renewable Energy, OCS study, BOEM 2020-011,

It is not consistent with NMFS's own previous recommendation in 2012 cited in that Report on page 30 for use of a 15 dB loss factor. In fact, that same report shows that the use of the 10 Log r formula, i.e., even less transmission loss than the 15 dB factor, compared better with real or simulated measurements (See Figure 3.2 on page 31). So even the practical spreading loss formula may overestimate transmission loss, and certainly the 40 log r formula does.

The use of a 40-43 dB loss factor here is not consistent with the method used by Tetra Tech Inc. for the Dominion Wind Energy Project as discussed in the report titled, Underwater Acoustic Modeling Report Virginia Offshore Wind Technology Advancement project, December 2013. In that report, Tetra Tech only uses the 20 dB factor out to the water depth distance. Tetra Tech then uses the lesser 15 dB factor from there to eight times the water depth, and beyond that uses a 10 dB factor.

The use of a 40-43 dB loss factor here is very far from the more conservative "worst case" formulas used by an Atlantic Shores noise specialist consultant, Pangea Subsea (Report 04563-1) in the Atlantic Shores application for incidental harassment authorization of December 15, 2021. Formulas 7 and 8 of that report only use a 20 dB loss factor from 1 m to 3.5 m, and a 10 dB coefficient beyond that.

A 40-43 dB noise loss factor is far from the effective transmission loss factor of 16 dB that reflects the distance to criteria results in the BOEM's own Atlantic Geological and Geophysical Activities Programmatic Environmental Impact (EIS) statement of March 2014. Using the above formula for transmission loss, that "effective" 16 dB value can be calculated from the radial distances (about 1750 meters) required to reach 160 dB in Table D-23 of the EIS for the four shallow depth scenarios 20, 26,30 and 34, and the representative source noise level of 212 dB for boomers (modeled as similar to sparkers) and sparkers, in Tables D-6 and D -13 respectively.

The use of a 40-43 dB noise loss factor here is not consistent with field measurements. A comparison of modeled transmission loss with actual measurements by Thompson et al. in the report titled, Effects of Offshore Wind Farm Noise on Marine Mammals and Fish, dated July 6, 2006, found that for pile driving events with frequencies less than 1000 hertz, the 15 dB loss factor was the best approximation of transmission loss for shallow North Sea and Baltic waters, and other settings comparable to this survey area, pages 15-16.

The use of the 15 DP noise loss factor has also been recommended by the Marine Mammal Commission and its letter to NMFS of September 21, 2015 on impact pile driving at the Kodiak Ferry Terminal project in Alaska, and in its letter of January

23, 2020 regarding impact pile driving during the construction of a new petroleum and cement terminal in Anchorage, Alaska.

Measured noise levels versus distance in Figure 6 of the report titled "Underwater noise emissions from offshore wind turbines", 2005, Klaus Betke also show a match with a 15 dB loss rate. The BOEM report titled "Effects of Noise on Fish, Fisheries, and Invertebrates in the U.S. Atlantic and Arctic from Energy Industry Sound-Generating Activities" recommends a default factor of 15 dB on page B-50, and shows a match of root mean squared(rms) measured noise results on page B-51 with a factor of 16 dB, both of which are dramatically different acoustically from the 40-43 dB being used here, and which would result in much larger exposure ranges.

A number of other studies use the 15 dB factor such as the recent analysis by Stober et al. estimating larger turbine noise source levels titled, How Could Operational Underwater Sound from Future Offshore Wind Turbines Affect Marine Life, March 15, 2021, and the recent study on passive acoustic monitoring (PAM) detection probabilities titled, Pam Guard Quality Assurance Module for Marine Mammal Detection using Passive Acoustic Monitoring, CSA Ocean sciences Inc., August, 2020.

Without a cogent physical and scientific explanation (not just an overview of model names and general descriptions), it is very difficult to see how noise spreading and dissipation well beyond even spherical spreading is being achieved in a regime where the noise propagation is confined to the modest distances and modest depths in coastal waters. The parabolic equation method stated briefly in Section E.4 of the Application appears to have been originally designed for very large distances, 50 to 60 km, and the deeper ocean, 4 to 5 km deep, (Fred D. Tappert, The Parabolic Approximation Method, 1977, the Courant Institute of Mathematical Sciences (the writers alma mater by the way).

The current exposure range calculations therefore assume very large noise dissipation not consistent with other prior calculations used for coastal waters. As a result, these calculations significantly underestimate exposure ranges and animal takes. The Application and the NMFS need to clearly explain what unique physical characteristics and constructs are present in and around this lease area that warrants such a radical departure from accepted practices regarding noise dissipation. In the absence of such an explanation, the application should be revised based on the NMFS's and the BOEM's own previously stated preference for the 15 dB loss factor in coastal waters.

5. Unjustified Noise Source Attenuation Assumption.

Regarding pile driving, the Application is not complete because it identifies no specific noise source attenuation system. Nor does it provide technical justification for the assumed 10 dB attenuation upon which it relies for certain calculations and conclusions. Without that specific proposal and justification, the assumption appears to be arbitrary and designed to artificially keep the level A take number

from direct injury, according to the current calculations, below the biological removal rate for the right whale.

As discussed below there appears to be no basis for assuming any significant noise source attenuation in the hearing frequency ranges of the right whale and other low frequency cetaceans (LFC's). Therefore, absent any evidence to the contrary the Application needs to revise its exposure range and take estimates wherever they relied on that assumption, such as in the creation of density area polygons and resulting take estimates.

Regarding source attenuation, it should be noted first that the use of bubble curtains or other systems that are placed immediately around the pile are inherently limited because they cannot attenuate ground-borne re-radiated sound. Therefore, appreciable attenuation is not achieved for the sound that resonates through the ground into the far field. More of the sound emitted during impact pile driving resonates from the ground than through the water column (Caltrans. 2015. Technical guidance for assessment and mitigation of the hydroacoustic effects of pile driving on fish. State of California Department of Transportation, Sacramento, California) and such sound is also of lower frequency impacting LFC's, such as the right whale, as discussed below in item 6.

The Level A take number for the right whale shown in Table 24 of less than one is critically dependent on the January through April exclusion timeframe (should also include December), and the assumed 10 dB attenuation of the pile driving noise source. However, regarding the assumed attenuation at the source, there is only a general reference to the use of bubble curtains in Section 11.2.12 with no specifics as to how it will be achieved in practice. That section also refers to prior measurements of noise attenuation systems that are reasonably expected to achieve greater than a 10 dB broadband attenuation. However, there is no reference provided for those measurements and that assurance, and it is unlikely that any prior measurements would be relevant to these new large diameter monopiles, and jacket foundations.

The discussion of sound attenuation methods in appendix B, Section 2.4 also does not inspire confidence regarding achieving a 10 dB attenuation. It does mention the difficulties encountered with needing larger bubbles for lower frequencies as discussed further below. According to the references provided, the single bubble systems appear limited to piles less than 8 meters in diameter, even though these piles could be as large as 15 meters. The Bellman reference states that noise attenuation systems for jacket foundations are limited, yet the Tables in the Application include 10 dB and higher attenuations for construction schedule 2 involving jacket foundations. The references indicate that for monopile foundations, double bubble curtains or other auxiliary systems will be necessary, but it's not clear that those will be successful for these diameters. In short much of the discussion is not relevant to the large diameter monopile foundations here or the jacket foundations. There is no specific proposal made that would be expected to achieve a 10 dB attenuation in the context of this project.

Absent evidence to the contrary, assumptions regarding broadband noise attenuation from air bubble curtains should be less than 5 dB, as recommended in Buehler, 2015, titled Technical Guidance for Assessment and Mitigation of the Hydroacoustic effects of Pile Driving on Fish, (see page 4–10). On page 2–18, Buehler (2015) cites actual project results of 0 to 5 dB of attenuation. Measured noise levels in the report titled Underwater Sound Levels associated with Driving Steel Piles at the Vashon Ferry Terminal, Laughlin, April 2010, show in Table 2 the effect of bubbles on root mean square (rms) noise values to be 1 dB. The report titled Underwater Reduction of Marine Pile Driving using a Double Pile, Reinhall, December, 2015, shows a maximum 5.5 dB reduction in rms levels for a bubble curtain. The Caltrans 2015 study cited above, has also stated that even in the near field an assumed source level reduction should be limited to 5 dB, because of the uncertainties associated with the degree of attenuation that would be provided by a bubble curtain.

Thus, achieving a 10 dB reduction would require an auxiliary system such as a double wall pile. However, as discussed below, even that would not address the problem of achieving reductions at the lower frequencies relevant to the right whale's hearing range.

We have seen no written, enforceable, commitment from Atlantic Shores management to achieve a 10 dB broadband attenuation. Also, as shown below there are significant technical problems in achieving such a large attenuation for the lower whale-hearing frequencies needed to protect right whales. In addition, since noise source levels are not presented, there is no way of measuring the noise level and verifying that a 10 dB attenuation is achieved in practice.

Therefore, the NMFS should not assume more than a 5 dB broadband attenuation, and with that, even using the questionable exposure ranges and takes estimates described above, the document admits that the project would cause Level A noise takes of the right whale, absent mitigation. But as discussed below in item 6, even that 5 dB is not applicable to the lower frequency situations involving the right whale and other LFC's.

6. Noise Source Frequency Attenuation. Regarding pile driving, the Application is incomplete because it does not address attenuation in the most relevant frequency range for the right whale and other LFC's. In that regard, it is not broadband attenuation that is critical here but attenuation of noise levels in the frequency range less than 1000 Hertz, as this is the range that overlaps right whale hearing. Attenuating the sound at lower frequencies requires larger bubbles; and practical problems have been raised regarding the control of bubble size distribution and the production of a sufficient number of large bubbles (several centimeters) that are necessary to achieve efficacy at low frequencies (see Measurements of Construction Noise during Pile Driving of Offshore Research Platforms and Wind Farms, Rainier Matuschek and Klaus Betke, NAG/DAGA 2009 Rotterdam).

More specifically, in the study titled Underwater Noise Emission Due to Offshore Pile Installation: A Review Article in Energies · June 2020 DOI: 10.3390/en13123037 by Tsouvalas of Delft University of Technology, it was stated that,

"For piles with diameters larger than 6 meters, that are used as foundation piles of offshore wind turbines, the acoustic energy is radiated at frequencies between 100 and 400 Hz (Section 4.3). At such low frequencies, the desired bubble radii to stimulate resonance range between 8 mm and 32 mm near the surface are between 14 mm (1.4 cm) and 50 mm (5 cm) at a water depth of 30 meters. The creation of bubbles of such large radii is rather difficult, especially in the harsh offshore environment. Thus, despite the role that resonance phenomena may play in sound absorption, the wave reflection caused by the impedance mismatch between the seawater and the air bubble curtain seems to be the single most significant mechanism leading to noise reduction".

As discussed above, achieving a 10 dB attenuation would require an additional auxiliary system such as a double walled pile. Such a system was employed and measured in the Vashon Ferry Terminal report cited above. However, a frequency analysis of the noise reductions between the unmitigated piled driving and the double wall pile shows, e.g., in Figures 9c and 11a, very little noise attenuation occurring below 1000 Hz in the right whale's primary hearing range, and the addition of bubble curtains in Figure 11d does not change that. This was not unexpected because, as discussed above, much of that low frequency sound was re-radiated from the seabed and not affected by the double pile or the close to source bubble curtains.

Therefore, even such auxiliary systems will not provide significant attenuation in the low frequency range, nor will bubble curtains. ***Consequently, the application needs to be revised to assume no attenuation in its calculation of exposure ranges and take estimates for the right whale and other low frequency cetaceans.***

In light of all these noise attenuation difficulties, it would be irresponsible for the NMFS to simply accept the applicant's assurances that a 10 dB can or will be achieved and proceed with a rulemaking based in large part on such a broad (frequency-wise), tenuous and unsupported assumption. Since many of the conclusions in the Application depend on that assumption, a rulemaking cannot logically proceed based on it.

Therefore, if a rulemaking proceeds absent a specific source attenuation proposal and justification, it should assume no noise source attenuation for the right whale and other low frequency cetaceans, and other more realistic attenuation numbers less than 5 dB for higher hearing frequencies, with technical justification for them.

7. Incomplete Level A Take Count- the Harm and Fatality from Level B Exposures.

Even with the very high unexplained transmission loss of 40 dB per decade used, the Application still shows a significant exposure range for the right whale for Level B exposures. For example, Table 20 shows a 6.33 km or 4-mile range using the NOAA RLp50 160 dB criteria, and no source attenuation which is appropriate as discussed above. Using more appropriate transmission loss factors closer to 15 dB per decade that exposure range is expected to increase significantly, and one would expect that exposures above the 160 dB behavior disruption criteria will extend across the entire 12-mile wide right whale's primary migration corridor.

Similarly, notwithstanding the restriction on pile driving from January through April, using the Wood et.al. more accurate approach for estimating takes, the Application in Table 24 still shows a significant 23 Level B takes for the right whale assuming the appropriate no source attenuation as discussed above. Therefore, using more appropriate transmission loss factors both the Level B exposure range and the number of Level B takes are expected to increase significantly requiring the additional analysis below.

Injury and fatality to marine mammals from noise can come from other ways besides hearing loss. The Application does not account for the potential for such harm and fatality from the results of Level B exposures, and therefore does not present a full and complete Level A take number. Rather, it estimates and separates Level A injury from Level B disturbance. But in the regulatory and the real whale world that distinction is not present, and level B disturbance exposures can indirectly lead to worse injury and fatality outcomes.

Under the MMPA, a Level A incident or "take" includes any annoyance that has the "potential to injure" a marine mammal. That linkage is also presented in the December 21, 2016, NMFS interim guidance, defining the term "harass," under the Endangered Species Act (ESA), as to "create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering".

Therefore, the Application should have included this linkage from reactions to level B exposures to create the "potential to injure" or the "likelihood of injury" with a level of analyses comparable to that given to direct Level A injury take from hearing loss.

With the use of proper construction-related noise source and noise transmission loss numbers, and for the turbine operational noise impacts as explained in Enclosures I and II, level B exposures will extend across all of the right whale's approximately primary 12- mile-wide migration corridor. Under the setting here of a critically endangered whale attempting to complete a migration that is essential to its survival through a well-defined and relatively narrow migration corridor that could now be blocked, that "potential to injure" or to "create the likelihood of injury" certainly exists from a number of possible results of a level B exposure including:

A. The whale is very likely to avoid the elevated Level B noise and its primary migration corridor, and seek a different migration path. But in this setting, to where? Due to proximity of the project (9 miles), elevated noise levels will persist all the way to shore. Wind turbines will also be placed in the Hudson South area directly adjacent to and on the opposite, eastern side of its primary migration corridor. To avoid that wind complex as well, it would have to go far out to sea, make a turn and continue, with a substantial increase in the distance to be traveled. Would it find food along the way?, would it arrive late?, would it complete, or would it abandon its migration? What are the implications of this on its feeding, health, reproduction, and survival? These are critical questions to be addressed here.

B. The whale may be disrupted from foraging and lose the energy it needs to complete its migration.

C. Since the level B impulsive noise criteria of 160 dB is greater than the normal vocalization range of the right whale of 125 to 150 dB, communication between migrating mothers and calves can be lost resulting in a calf fatality, and

D. A level B exposure can cause whales to ascend, and swim just below the surface where they are more susceptible to vessels strike, not just from construction-related vessels, but from other vessels as well. This behavior has been demonstrated experimentally by Nowacek et al in the paper titled, North Atlantic right whales ignore ships but respond to alerting stimuli, The Royal Society, May 20, 2003.

From the estimated level B exposure numbers, the number of whales likely to experience any of these above results needs to be estimated and added to the direct level A injury take numbers from hearing loss to get a full and complete level A take estimate. As discussed above, the level B exposure number used should assume no noise source attenuation for the right whale and other LFC's. In addition, as discussed further below, the level B exposure numbers used should be based on the Wood et al. probability of response approach to account for reactions of the more noise-sensitive members of the right whale population.

All the reactions A through D above and perhaps others will affect the right whale's migration. Therefore, the effect of all should be summed to present the full impact on its migration, and what that means for its survival. **For this migratory setting, a new and separate Migration Impact Report (MIR) should be done.**

8. Masking of Whale Communications that could impair or prevent its migration, leading to serious injury or death.

The whales use sound to communicate with each other during migration. The impacts of masking those communications, including obstruction or delay of the

right whale's migration, should have been (but was not) analyzed in the ITA Application, as it has direct implications on the survival of the species.

The Application only provides a general discussion of masking in section 7.1.1 and limited information about the right whale's vocalizations in section 4.1.4 where it mentions a tonal call as low as 137 dB. However, it does not tie the two together to discuss the problem, as explained below.

One path to such injury involves separation of calves from mothers as a result of masking of their communication from elevated noise levels. Such communications can employ low-amplitude signals susceptible to masking as discussed in the report, Acoustic crypsis in communication by North Atlantic right whale mother–calf pairs on the calving grounds, Susan E. Parks, Dana A. Cusano†, Sofie M. Van Parijs and Douglas P. Nowacek, Published:09 October 2019.

The right whale's vocalizations are normally at the 125 dB rms level for low background noise (lower than mentioned in the application), but can rise to 150 dB in the presence of high background noise (Parks et.al., The Royal Society, Individual right whales call louder in environmental noise, July 7, 2010).

The potential for loss of mother/calf communication was presented in, Acoustic propagation modeling indicates vocal compensation in noise improves communication range for North Atlantic right whales, Jennifer B. Tennessen, Susan E. Parks, June 15, 2016. The 125 to 150 dB range is lower than the impulsive disturbance criteria of 160 dB. Therefore, masking will occur at distances greater than those calculated for the behavior criteria. Those masking distances need to be calculated, and considered in determining the potential for harm and Level A takes as discussed above, and to delineate monitoring and mitigation zones.

9. Marine Mammal Detection. The application does not contain a plan for the deployment of a passive acoustic monitoring (PAM) system, not even a schematic diagram of how many monitors and where they will be placed relative to the pile-driving source. As shown below, a PAM system consisting of several support vessels (versus the single one proposed) removed from the pile driving source vessel to avoid masking, and/or mono-buoys that can operate in real time placed strategically, will be needed. It needs to show a schematic layout of how many and where monitors will be placed to assure the necessary coverage for exclusion and monitoring zones. It needs to provide an analysis of and state the probability that with visual observers and its PAM system, a marine mammal will be detected.

10. Cumulative Impact. Regarding nearby projects, the Application does not address, as suggested in the MMPA, the cumulative impact of similar actions in the same geographical area, such as the Ocean Wind project just to the south of this project and the wind energy development planned for the Hudson South area to the east of this project, both of which would add to the intensity and duration of the noise received by marine mammals in the area from this project alone.

Regarding the scope and duration of impacts, the Application does not address the full range of activities involving each project from ocean surveys, to construction, to operations, to decommissioning as there are issues with each phase and the harassment will be basically be continuous from now for the next 40+ years.

11. Decommissioning. Deferring all consideration of decommissioning for many years is not in our view a responsible planning approach. Without some definition now and a binding commitment on the applicant, that could easily lead to misunderstandings, and foreclose the use of hundreds of thousands of acres of a precious ocean resource in perpetuity.

While the exact number of turbines to be decommissioned may have to await, at a minimum "decommissioning" should be defined. There should be a condition of project approval that for these wind turbines "decommissioning" means dismantling, removal, and disposal of the blades, the nacelle, and the tower entirely, and for foundation removal to a minimum pre-specified depth below the seabed. Corresponding definitions should be specified for the cables and substations as well.

In addition, the application should, *for a single turbine*, present the technical feasibility of doing it, and then assuming it can be done, each step involved and its environmental impact. For example, for cutting the foundation, what are the techniques to be used, e.g., by diamond wire or water jetting, and their noise and other impacts? Also, how many ships, how large, what flag, how many trips, and how many workers will be involved? What equipment will be needed? How long will the removal process take? For each component what are the recycling and disposal options? A cost estimate for one turbine should be provided, again just to see if this is feasible.

Since it has never been done before, without some confidence that these large turbines can in fact be decommissioned, it would not be responsible to just assume it.

Without these eleven essential pieces of information above, the Application cannot be considered complete. It should be returned to the applicant for revision.

Additionally, there are a number of other problems that require attention before proceeding to a rule making.

Project Scope: Number of turbines. Regarding the number of turbines considered, the scope of the proposal is too small. It should include the full project in the lease areas of 357 turbines for which COPs have been submitted. The COP for project 3 was submitted in April, 2022, using similar turbines and layouts, leaving ample time to include it here. The EIS and this take authorization should address the full project

to determine the full impacts on marine mammals, and not segment and break it up into pieces to minimize impacts.

Project Scope: Turbine Power and Drive. The Application does not disclose the power of the proposed turbines (WTGs), which is a significant omission, because the size and power of the turbines not only affects pile diameter and driving depth and thus pile driving duration and pile driving noise; it also affects the operational noise generated by the turbine and by the wind array as a whole. This is especially the case where (as here) the turbines in question are gearbox-driven.

Enclosures I and II, attached hereto, provide the operational noise source level for the Vesta-236 turbines selected here based on two excellent studies: "How could operational underwater sound from future offshore wind turbines impact marine life?" by Uwe Stober and Frank Thomsen, *The Journal of the Acoustical Society of America* 149, 1791 (2021). and Tougaard et al., How loud is the underwater noise from operating offshore wind turbines?, Journal of the Acoustical Society of America 148(5), November, 2020**.**

Project Impact Scope, Operational Noise: The scope of the impacts to be considered in the ITA is not sufficient. Using the noise source levels derived as mentioned above, along with accepted noise propagation loss methods just for an array of seven turbines, it is shown in Enclosures I and II that the continuous noise behavioral criteria of 120 dB will be exceeded throughout the right whale's primary migration corridor. This could potentially block the essential migration of the right whale. The problem is summarized in Enclosure I in a presentation given to the North Atlantic Right Whale Consortium on October 26, 200, and explained in more detail in Enclosure II. Therefore, the scope of this rulemaking should be expanded to include a thorough analysis of operational noise impacts, particularly on the migration of the North Atlantic right whale.

Disclosure of Noise Source Levels. Noise source levels should be disclosed for all phases of the project. That is not the case here regarding pile driving. In Table F1 for the LFC 95% range, a single strike sound exposure level (SEL) value of 180 dB is listed at 50 meters (m). Back calculating that to 1 m using a spherical spreading 20 dB loss factor would result in a single strike SEL source level of 214 dB.

The simultaneous solution pf the transmission loss equation, Source Level-183 dB=Noise transmission loss factor x log (exposure range), for the L_E exposure range numbers in Table 20 for the North Atlantic right whale and source attenuations of zero and 15 dB yields a SEL source level of 243 dB.

Elsewhere, the 2007 report by Sub-acoustictech titled "Measurement and interpretation of underwater noise during construction and operation of offshore wind farms in UK waters", shows peak levels of pile driving noise increasing strongly with pile diameter. Extrapolating that data to a 12-meter diameter pile

yields a peak source level of approximately 270 dB. Applying a ratio of 0.89 for SEL to peak numbers (Table 7–9 of the Nuclear Regulatory Commission report on Construction Noise Impact Assessment) gives a SEL number of 240 dB.

The Application should state whether the 240 to 243 dB range is the SEL source level and explain its relationship to the single strike value. Similarly, the source levels used to calculate Level B exposure ranges should be disclosed, including clarification of peak, SPL, and rms levels.

Marine Mammal Densities. Regarding pile driving, the 3.9 km polygon created around the lease area for calculating marine animal densities is too small and its use will miss the higher densities of the right whale in much of its primary migration corridor. It should not be based on the tenuous 10 dB attenuation assumption. Rather as described above, for the right whale and other LFC's it should be based on no source attenuation, and for higher frequencies it should assume no more than 5 dB reduction.

Similarly, regarding the HRG surveys the areas shown around the lease area in Figure 14 of the Application should be expanded based on the exposure ranges for a 211 dB noise source and a 15 dB noise loss factor as discussed in detail in enclosure III. Again, the use of a small technically unjustified 141-meter exposure range misses most of the North Atlantic right whale's primary migration corridor.

Further, regarding the HRG vessel surveys proposed here, using average seasonal numbers based on the human calendar (Section 6.1.1.3) is arbitrary and not conservative-as stated in the application. Since the applicant will not commit to, nor will NMFS require, that the 60-day vessel surveys be avoided during the right whale's primary migration months that scenario must be considered. Therefore, the density for the right whale should be the average of the February and March numbers in Table 12, or 0.656 animals per 100km2, which will double the density number being used in Table 14.

Animal Noise Aversion Modeling. The behavior of marine mammals, in particular the right whale in response to elevated noise levels is the subject of considerable scientific work and uncertainty. While there is general consensus that the whale will seek to avoid the noise, it is less clear how quickly the whale will isolate the directional source of the noise and move away from it. The Application presents none of the basic assumptions being made in the animal aversion modeling nor any scientific justification for them. Absent such disclosures to allow for a review of them based on current scientific knowledge all the aversion modeling should be dispensed with.

Take Estimates for the Sound-Sensitive Population. As discussed in the Enclosures, the precarious state of the North Atlantic right whale and its very low biological removal rate require that the NMFS show with high statistical confidence that not a single whale will be seriously harmed or killed as a result of this take authorization.

Take estimate analysis by the NMFS to date have not done that. They rely on mean estimates of animal density, vessel and animal speeds and other factors. They also use the 160 decibel (dB) criteria for impulsive noise and 120 dB criteria for continuous noise which are based on thresholds at which half of the animals respond (RLp50). This can grossly underestimate the number of animals affected as shown in the paper by Tyack and Thomas, titled, Using dose-response Functions to improve calculations of the impact of anthropogenic noise, September, 2019.

Providing that statistical confidence starts with an acknowledgment that that a sensitive sub population will be affected at levels below 160 dB for impulsive noise and 120 dB for continuous noise. Although the density of that sensitive population is less, the distance required to meet those lower dB numbers increases exponentially, and for a point source like pile driving the area affected increases by the square of that distance. So, it is likely that the product of the lower density and the much larger area affected, or the number of takes, will be greater than that calculated using the fifty- percent affected criteria. The NMFS needs to include such an analysis in its take estimates.

The level B exposure estimates using the Wood et al (2012) probabilistic approach for different sound levels that is presented in the Application are a good start for doing that, and should be used for the starting Level B numbers to estimate indirect Level A takes discussed in Section 7 above. The NMFS needs to provide a similar does-response relationship to calculate its Level A takes from hearing loss.

Inconsistent Treatment of Vessel Survey Impacts. With regard to the treatment of vessel survey impacts in a proposed rule we ask that the NMFS reconsider the comments we provided on the previous Atlantic Shores vessel survey and others, presented now in Enclosure III. We raised concerns regarding the use of low noise source levels (203 dB for the Dura-Spark unit), high noise dissipation rates (20 dB per decade for horizontal distances greater than the water depth), the justification for the NMFS small numbers criteria, and the lack of evidence and scientific support for findings of negligible impact.

Regarding the 203 dB level presented in Table 3, the Application uses data from a much smaller less powerful device merely because it had a data point for the power level to be used, rather than simply interpolating between two power levels for the actual device, which would result in a source level of 211 dB. This to us has no rational technical basis. In addition, it has ignored the fact that the 211 dB noise source number for the Dura spark 240 unit appears in a number of other technical reports as shown in Enclosure III. The NMFS should require the use of the 211 dB number for the source level which of course would make a large difference in the actual exposure range and ensonified area.

Regarding noise dissipation for vessel surveys, as explained in Enclosure III, the NMFS is allowing the use of a 20 dB per decade noise loss factor for vessel surveys for this project which is inconsistent with the 15 dB “practical spreading” factor it

has used for many other Incidental Take and Harassment Authorizations, as summarized above.

Even within this same ITA Application, the NMFS would be using two different noise loss methodologies for vessel survey noise versus pile driving construction noise. For impulsive noise reaching the behavioral level of 160 dB it is apparently using a 40-43 dB transmission loss factor for pile driving versus 20 dB for vessel surveys.

The NMFS needs to either explain the departure here from its prior practice and why it would allow the use of two very different noise loss factors for impulsive noise sources in the same area, or revise its vessel survey methodology to use the 15 dB factor as recommended above and in Enclosure III.

Therefore, these concerns are presented again in Enclosure III along with certain NMFS responses, which as explained we do not find convincing. We again ask that the NMFS change its calculation methodology regarding the analysis of vessel survey noise impacts. We ask again that NMFS adopt mitigating measures for vessel surveys such as passive acoustic monitoring (PAM) and simply scheduling surveys to avoid the right whale's primary migration corridor during its main migration months. We note that the failure to schedule vessel surveys to avoid the right whale's migration corridor and months is inconsistent with its better approach on scheduling pile driving.

Inadequate Mitigation of Pile Driving Noise, Leading to Level A Take of North Atlantic Right Whales. The Application, even with its very large noise loss factor, admits that under certain construction scenarios, project pile driving will expose North Atlantic right whales to direct Level A harassment noise, resulting in Level A take from hearing loss. With the realistic noise loss and limited low frequency attenuation described above, that Level A take will increase and exceed the right whale's biological removal rate. With the addition of the indirect harm from Level B exposures discussed in Section 7 above, the Level A take will get even larger.

As discussed above, the noise dissipation modeling and the assumption of a 10 dB noise source attenuation for the right whale are flawed. Even using the current Application modeling and just correcting for no source attenuation for the lower frequencies pertinent to the right whale's and other LFC's hearing range, the results of Tables 20 through 23 would call for minimum buffer and exclusion zones of 3500 m (versus 1900) and a Level B monitoring zone of 6400 m (versus 3900).

Therefore, the Level A exclusion zone and the level B monitoring zone distances need to be re-calculated and restated for Table 1 in appendix E. Those new larger zones will require much more robust PSO and PAM detection systems than is currently described in the Application. In addition, the terminology in the text does not match the labels in Table 1 making it difficult to understand the material.

Despite its stated but underestimated Level A Takes, the Application, however, then pivots and contends that no such take will occur due to the detect-and-avoid mitigation measures that Atlantic Shores will implement. As shown below, these

mitigation measures are facially inadequate and will not sufficiently protect right whales from the project's Level A noise.

1. **Soft Start Procedure Unproven and Unlawful.** The Application indicates that Atlantic Shores will implement a "soft start" pile driving procedure where each pile driving episode begins with hammer drops at less than maximum intensity, thereby providing a "warning" to whales and encouraging them to leave the pile driving impact area. There is no evidence that this soft start strategy will work as planned, especially if any of the whales are actively foraging. The data indicate that whale behavior in response to noise stimuli varies dramatically among species and even among individuals within a single species. Further, the data indicate that whale behavior in response to noise also varies depending on context. Note also that the "soft start" is a form of animal hazing and thus constitutes *intentional* harassment rather than *incidental* harassment. As such, it cannot be authorized under either the MMPA or the ESA. See 50 CFR § 18.27(c) (Subchapter B) [MMPA distinguishing "incidental" take from "intentional" take]; see also 16 USC §§ 1538 and 1539 [ESA prohibits all take unless "incidental" to a lawful activity]; see also *Strahan v. Roughead, supra,* 910 F.Supp.2d at 367.

2. **Soft Start Clearance Procedure, If Successful, May Expose Right Whales to Other Threats.** The purpose of the soft start procedure is to clear all right whales from the pile driving impact area during each day's pile driving operations. If successful in this effort, the soft start procedure will effectively force right whales out of their preferred foraging areas and/or migration routes, an impact not addressed in the application. The soft start clearance process will also push whales into areas where they may encounter other threats, including but not limited to heavy vessel traffic and fishing gear. This impact, too, is omitted from the Application's analysis.

3. **PSOs Will Not Be Able to Detect and Protect Right Whales.** According to the Application, Protected Species Observers (PSOs) will ensure no right whales enter (or remain in) the Level A "ensonification" zone. However, PSOs have a limited visual range (approximately 1,500 meters from an elevated platform, approximately 1,000 meters from a vessel bridge). Worse, PSOs cannot observe right whales more than a few feet (5-10) below the water's surface; whales swimming at depth will go undetected. It also appears that pile driving will be allowed to take place after sundown, provided the pile driving event in question commences during daylight hours. This means that PSOs will be asked to look for and detect right whales in the dark using night-vision goggles and heat sensing devices. There is no evidence that these specialized pieces of equipment will allow PSOs to detect whales in the dark at distances more than a few hundred meters. And, of course, night goggles and heat sensing devices will be of little use when the whales are swimming under the water at depth.

4. **PAM Systems Have Significant Limitations.** The Application indicates that the PSO detection effort will be supplemented by passive acoustic monitoring (PAM) equipment. However, according to a recent study titled "PAMGuard Quality Assurance Module for Marine Mammal Detection Using Passive Acoustic Monitoring (2020)," PAM systems have critical limitations when it comes to detecting marine mammals, especially baleen whales like the right whale, which tend to vocalize much less frequently than other cetaceans. The study was published in August 2020 and prepared by CSA Ocean Science, Inc., with assistance from scientists at the University of St. Andrews (Scotland) and the Scripps Institution of Oceanography, University of California, San Diego. The primary author of the study is Mary Jo Barkaszi of CSA Ocean Sciences, Inc.

   The study explains that PAM systems may have a significant "miss rate" when attempting to detect marine mammals, even those that vocalize many times an hour. In addition, a PAM system's performance efficiency depends on many factors, including (i) the system's ability to detect weak signals that may be masked by background sound levels and (ii) the operator's ability to stay attentive and interpret the sound data produced by the monitoring equipment. The chief limitation, however, is that PAM systems only detect whales that are actively vocalizing; whales which are not vocalizing simply do not register. Given that right whales often go days or weeks without uttering a sound, there is a real possibility that such "silent" whales will enter the Level A impact zone undetected by either PSOs or PAM. If this happens, those whales will be exposed to Level A noise and potentially sustain auditory damage and permanent threshold shift (PTS).

   Specifically, regarding the right whale, that Study found that (Figure 10 of the Study) the mean probability of right whale detection varied from 0.9 to 0.5 at 500 m for low and high background noise conditions respectively. At 1500 m those probabilities drop to from 0.5 to 0.03, and are subject to wide statistical variation. Given the need for a Level A exclusion zone of at least 3500 m as explained just above, this will require a PAM system consisting of a substantial number of support vessels (versus the single one proposed) removed from the pile driving source vessel to avoid masking, and/or mono-buoys that can operate in near real time placed strategically.

5. **PAM Coverage Area and Shutdown Zone Not Defined.** Despite its limitations, PAM does provide some ability to detect vocalizing whales when they are within the coverage area of the PAM equipment. Unfortunately, however, the Application does not adequately describe or define the PAM coverage area during project pile driving operations. Nor does it define the size or the boundary of the "shutdown" zone – i.e., the area where, if a right whale is detected within it, will require an immediate shutdown of pile driving. Much greater detail needs to be provided

regarding the deployment of the PAM system as to where and how many monitors will be placed and how data will be gathered in real time.

Shut Down Procedures Must Be Applied to Animal Detections within the Level B Monitoring Zone for Migrating Species. The shut down and mitigation procedures adopted for the level A exclusion zone need to be applied to the level B monitoring zone as well.

In a migratory setting, Level B disturbances may not be just some innocuous short-term inconvenience to the right whale that it can easily avoid and continue its migration, as the Application suggests. As discussed above in Section 7 and in the Enclosures, in a migratory setting, a level B disturbance can lead to serious harm or fatality, the same as for a direct Level A exposure.

This can occur from several pathways. As mentioned in Section 7 above, a Level B disturbance may disrupt foraging that is necessary for the whale to continue its migration. Avoiding a Level B disturbance can block or delay the right whale's migration. Since the impulsive Level B criteria here of 160 dB is greater than the right whale's normal vocalizations of 125 -150 dB, a Level B exposure will mask mother/calf communication during migration likely leading to separation and death of the calf. Based on the Nowacek et al. experiments described above and in Enclosure III, Level B exposures can cause the whale to surface and swim just below the surface where it is more vulnerable to vessel strike. The simple, inescapable, logic here is that if a right whale is attempting to migrate through a Level B exposure zone, we cannot disturb it and must let it pass. Therefore, the same shut down and other mitigation procedures applied to direct Level A injury should also be applied to indirect injury from a level B disturbance.

Vessel Strike Mitigation Measures are Inadequate. Vessel strikes pose a major threat to right whales. The Atlantic Shores project will require the use of a wide range of vessels, some with the ability to travel at speeds in excess of 15 knots – the speed at which a collision with a right whale is 100 percent fatal for the whale. For example, according to the Application, all project vessels must travel at 10 knots or less, ***except*** crew transfer vessels, which need not adhere to the 10-knot speed limit. Not only are crew transfer vessels the most common vessel type used by the project, they are large (averaging about 90 feet in length) and they are fast (averaging 25 to 29 knots). By allowing crew transfer vessels to travel at speeds in excess of 15 knots, Atlantic Shores and NMFS effectively undermine the protective benefits of the 10-knot speed limit, leaving right whales vulnerable to vessel strikes and mortal injury.

The Application argues that PSOs and PAM equipment will ensure that no whales are harmed, even by crew transfer vessels traveling at speed. But as shown above, PSOs and PAM, whether working in concert or individually, are not sufficient to protect whales from fast-moving vessels. The PSOs cannot detect whales under the water's surface or hidden by high swells, and PAM cannot detect whales that are not actively vocalizing.

Another defect in the Application is that it does not clearly disclose how many total trips will be made by each vessel type; nor does it clearly disclose how many vessel

miles each vessel type will travel during the course of the project's construction, operation, and decommissioning.

Mitigation Measures Provide Atlantic Shores with Too Much Discretion. One of the major structural defects of the project's mitigation program is that it gives too much discretion to Atlantic Shores in terms of when certain protective measures can and should be implemented. For example, the Application allows Atlantic Shores to determine when whale protective measures are infeasible or would otherwise jeopardize construction activities. This approach provides little assurance that the welfare of right whales and other federally-listed species will be prioritized over construction schedules and other economic considerations. In short, the mitigation measures provide too little regulatory oversight by NMFS.

Transparency. Regarding noise impacts from construction activities, notably pile driving, we note that in prior EISs, Biological Assessments and Take Authorizations, noise source levels have not been provided. Noise dissipation factors are also obscured by the use of various opaque models. These are critical disclosure omissions because it does not allow for scrutiny of the calculations of distances to meet NMFS noise criteria or take numbers to see if those calculations are compatible with current scientific practice. Noise source levels and the basic driving equations in any "models" used must be disclosed in any rulemaking.

In Appendix E, paragraph E.4, the Application provides several references to support the use of its marine operations noise model (MONM) noise propagation model. One reference was available to us but does not compare and explain that modeling approach to other traditional methods. It only shows that model inputs can be adjusted to produce a wide range of exposure range results, which actually amplifies the concerns here, i.e., that in addition to the physical and mathematical depictions within the model we do not know what key inputs are being used. The other references were not accessible, and were requested from the NMFS, but not received. We also note here that the Marine Mammal Commission has raised questions regarding the JASCO MONM model as well as the JASCO pile driving source model (PDSM) in its letter to the NMFS dated March 1,2021, on the South Fork Wind project.

Compounding this problem here, we note that the calculation of exposure ranges and take estimates has been further obscured by the use of an opaque "Jasmine" model purporting to account for whale behavior in the presence of elevated noise levels, for which basic assumptions, equations and inputs are not made available. This is a subject of with considerable uncertainty and the assumptions made need to scrutinized for their scientific justification. This information must be disclosed in any subsequent rulemaking to allow comparison of the equations and numbers used and the results with main stream scientific practices. If it is not disclosed the NMFS should not allow the use of this model.

MMPA Review Criteria. In any subsequent rule making, the NMFS should reconsider and lower its thirty-three percent of the species population criteria for

determining "small numbers". As explained in Enclosure III this is not consistent with prior case law which requires a number less than twelve percent, a number of recent scientific impact studies which point towards numbers of a few percent, or the common English language usage of the word "small".

We have also noted that the NMFS casually assumes that a whale encountering an elevated noise level will simply avoid it. We do not believe the situation is that simple as whales may not know where the noise is coming from, and other factors come into play in determining the whale's behavior. The NMFS reliance on an opaque Jasmine model to predict such behavior does not provide sufficient disclosure of this issue, so again, the NMFS needs to disclose the basic assumptions equations and inputs for that model. In general, it needs to provide much better justification for these simple but sweeping whale behavior conclusions regarding noise avoidance and other behaviors.

NEPA Compliance and Coordination. Considering the magnitude of the construction proposed, the noise generated and the proximity of marine mammals to the site, the granting or denial of this take authorization would constitute a major federal action significantly affecting the environment. It must therefore by supported by an environmental impact statement (EIS). Therefore, the NMFS must prepare its own EIS or work with the BOEM as a cooperating agency in the preparation of its EIS, and then consistent with NEPA rules, this ITA review must be coordinated with the EIS review to the "maximum extent possible".

That logically means that the proposed rule here should go out coincident with the draft EIS so the public can see and benefit from the NMFS perspective on this critical subject in its review of the EIS, and the final rule released with the final EIS. This sequencing was recommended in our comments on the EIS Notice of Intent but apparently ignored.

Since this action has been initiated late relative to the EIS, a draft of which is expected soon, either the proposed ITA rule release should be accelerated or the **release of the draft EIS should be delayed until the proposed ITA rule is ready, which we understand to be May of 2023.**

Also, according to BOEM's new NEPA policy, to consider projects with power levels from the lease area limited only to those that have been approved by the State, the scope of the Application would be too large. The State of New jersey has only approved the turbines for project 1 for 1,510 megawatts, not the 800 megawatts for project 2. Therefore, to be consistent with BOEM policy, the scope of this Application would have to be limited to project 1. However, we believe the BOEM NEPA policy is flawed legally and is far too restrictive in its lack of consideration of alternate power levels, and as said just above the required course is to consider the full 357 turbine project.

Compliance with the Jones Act. To confirm compliance with the Act, regarding foundation installation and Table 5 of the Application, the specific transport barges

that may be used should be identified. It is our understanding that these must be US flag vessels and that virtually none exist today of the size necessary to transport these large turbines to the installation site. In addition, the wind turbine installation vessel to be used should be identified and how its operation will comply with Act explained.

Compliance with Other Statutes, e.g., ESA Consultation. The NOA makes no mention of compliance with the ESA. We would hope that a Section 7 consultation is underway. If so, that should have been coordinated with the EIS and this ITA process. Specifically. the biological assessment should be made available at the time the draft EIS and proposed ITA rule are released, so again the public can benefit from both the BOEM's and NMFS's perspective on these subjects in its review of the EIS. This was recommended in our comments on the Atlantic Shores EIS notice of intent but apparently disregarded.

Historical Perspective. The FR Notice incorrectly states that Atlantic Shores secured the lease area through a competitive process. It purchased the area from another company. For a full background discussion, The FR Notice also needs to explain how the New Jersey wind energy area came into being, because in our view that process was flawed and did not take into account the impacts to marine mammals being reviewed now. This provides perspective on why, in order for this project to proceed, the NMFS at this late stage now has to reach the rather arbitrary conclusion that 357 large, noisy, wind turbines in or adjacent to the migration path of a critically endangered whale will have a negligible impact on it.

Conclusions and Recommendations.

1. Project Redefinition. Regarding injury to the right whale, i.e., Level A takes, from construction noise, both the 10 dB source attenuation assumption, and the high noise transmission loss factors used in the Application are technically unsupportable and arbitrary, and appear designed to just produce a Level A take estimate from hearing loss less than its biological removal rate of one animal.

Using appropriate noise transmission loss factors, assuming no attenuation of noise source levels at the lower frequencies relevant to the right whale's hearing range, and counting the number of level A occurrences resulting from level B exposures, the number of Level A takes for the right whale will significantly exceed its biological removal rate, and create major implications for its decline. The addition of operational noise and survey impacts will increase that Level A exceedance even further.

Regarding Level B disturbances to the right whale's behavior, even with the very high unexplained transmission loss of 40 dB per decade used, the Application still shows a significant exposure range for the right whale. For example, Table 20 shows a 6.3 km or 4-mile range using the NOAA RLp50 160 dB criteria, and no source attenuation, which is appropriate for the whale as discussed above. Using appropriate transmission loss factors closer to 15 dB per decade, that exposure

range is expected to increase significantly, and one would expect that exposures above the 160 dB behavior disruption criteria will extend across the entire 12-mile-wide right whale's primary migration corridor here.

Similarly, notwithstanding the restriction on pile driving from January through April, and the very high transmission loss factors, using the Wood et.al. more accurate approach for estimating takes, the Application in Table 24 still shows a significant 23 Level B exposures for the right whale assuming again the appropriate no source attenuation as discussed above.

Therefore, using appropriate transmission loss factors and no noise source attenuation, both the Level B exposure range and the number of Level B exposures impacting its behavior are expected to increase significantly creating major implications for the whale's migration as discussed above in item 7. The addition of operational noise will increase Level B exposures further and complicate the situation since turbine shut-down procedures will likely not be practical.

Based on the above, any finding of negligible impact to the right whale from this project would be arbitrary. If numerous vessel surveys, the driving of 357 foundation piles, 12 to 15 meters in diameter, and the long-term operation of 357 15-megawatt gearbox turbines each turbine with a noise source level of at least 180 dB, will have a negligible impact on a critically endangered whale attempting to migrate through the area, then it is hard to imagine any ocean activity that would violate the MMPA take provisions.

We would recommend that NMFS take a step back from the comment/response mode, and consider the implications and precedent-setting nature of pursuing this rule-making. In essence, it would be proposing is that placing and operating 357 huge gearbox turbines in and near the migration path of a critically endangered whale will have a negligible impact on it. Such an incredulous proposal would have far-reaching implications regarding the strength of the MMPA, how it is being administered, and frankly on the credibility and reputation of the NMFS.

Rather, we would suggest that NMFS exercise judgement and its legal authority here, and not proceed with this rule making absent a significant change in the proposed project itself. Those changes could include establishing buffer or turbine exclusion zones away from the whale's primary migratory corridor, and reducing the number, size and drive type of the turbines to be used, to produce less construction and operational noise. This is the only way that this project could possibly be made compatible with the MMPA. We would be glad to discuss with the NMFS more detailed changes along these lines.

2. Technical and Scientific Transparency and Justification. As explained above many factors going in to the exposure range and take estimates need to be fully justified scientifically. The Application and the NMFS need to clearly describe the basic mathematical constructs and inputs being used for its modeling. It needs to explain what unique physical characteristics and mechanisms are present in and

around this lease area that warrant such radical departures from the scientific literature in terms of accepted noise dissipation factors.

3. Revision of Level A and B Exposure Ranges and Takes. In the absence of such disclosures and justifications, the exposure range and take numbers in the application, or in any other technical support document used for a rule-making, should be revised using the NMFS's and the BOEM's own previously stated preference for use of the 15 dB noise loss factor in shallow coastal waters. Noise source Levels used should be disclosed and justified. Marine mammal densities should be adjusted as described above. The Wood et al, probabilistic approach should be used for calculating Level B takes and a similar relationship developed and used for Level A takes from hearing loss. Indirect injury from Level B exposures should be added to the Level A takes from hearing loss.
Regarding noise source attenuation, the Application or any other technical support material used for a rulemaking should be revised to assume ***no noise source attenuation*** for the right whale and other low frequency cetaceans, and other more realistic attenuation numbers ***less than 5 dB*** for higher hearing frequencies, with technical justification for them. As demonstrated above, it would not be appropriate for the NMFS to proceed with a rulemaking based in large part on a tenuous, unsupported and unverifiable 10 dB source attenuation assumption.

3. Application Revision. As explained above in Sections 1 through 9, this Application is not complete in other respects. It should address, among the other omissions described above, the full project scope of 357 turbines and operational turbine noise impacts. It should be revised before any rulemaking proceeds.

4. Corrections and Additions Needed to Support any Rulemaking. If the NMFS proceeds with this rulemaking absent changes in the application,

Its timing relative to the EIS and a Section 7 ESA review should be adjusted as described above.

It should address the full project of 357 turbines.

It should address, as referenced in the MMPA, the cumulative impact of similar actions in the same geographical area, such as the Ocean Wind project to the south of this project and development in the Hudson South area to the east of this project, both of which would add to intensity and duration of the noise received by marine mammals.

It should identify the Vesta-236 15-megawatt turbines to be used, their expected mean power output, and their operational noise source levels.

It should include turbine operational noise impacts.

It should address all vessel surveys undertaken.

It should create a new technical support document (TSD) disclosing and justifying all SPL and SEL noise source levels, noise transmission loss factors, and noise source attenuation assumptions.

It should, in that TSD, use disclosed and justified source levels, and revised noise transmission loss factors and noise source attenuations in new calculations of exposure ranges and takes,

It should provide a description and rationale for the whale behavior assumptions being employed in the Jasmine model, otherwise it should dispense with the animal avoidance scenarios.

It should revise its monitoring and mitigation zones and procedures as discussed above, consistent with those new calculations.
It should revise its vessel survey impact methodology as explained in Enclosure III, and adopt much more protective mitigation measures to achieve the least practicable adverse impact.

It should provide for a lower "small numbers" criteria of a few percent, a noise-sensitive subpopulation analysis, an analysis of potential harm and fatality from the results of Level B exposures, and PAM system details.

To summarize, there are many scope and technical and informational deficiencies with the current Application, and based on it, this action is not ready for a rulemaking. We suggest that substantial more work needs to be done before proceeding to that.

If a rulemaking proceeds, we strongly recommend that a new technical support document be created by an independent contractor that would address the deficiencies presented here.

Sincerely,

Bob Stern, Ph.D., former Director, Office of Environmental Compliance, U.S. Department of Energy, on behalf of Save Long Beach Island, Inc., drbob232@gmail.com, 917 952-5016.

Cc; Benjamin Freidman, NOAA Administrator
benjamin.freidman@noaa.gov
Janet Coit, Assistant Administrator, NMFS
Janet.Coit@NOAA.gov
Karen Baker, BOEM
David Hubbard, Esq.

Enclosure I Operational Turbine Noise Impact, Summary
Enclosure II Operational Turbine Noise Impact, Detail
Enclosure III Vessel Survey Noise Impacts

Impact of continual large turbine operational noise on the migration of the North Atlantic right whale

Presentation to the North Atlantic Right Whale Consortium

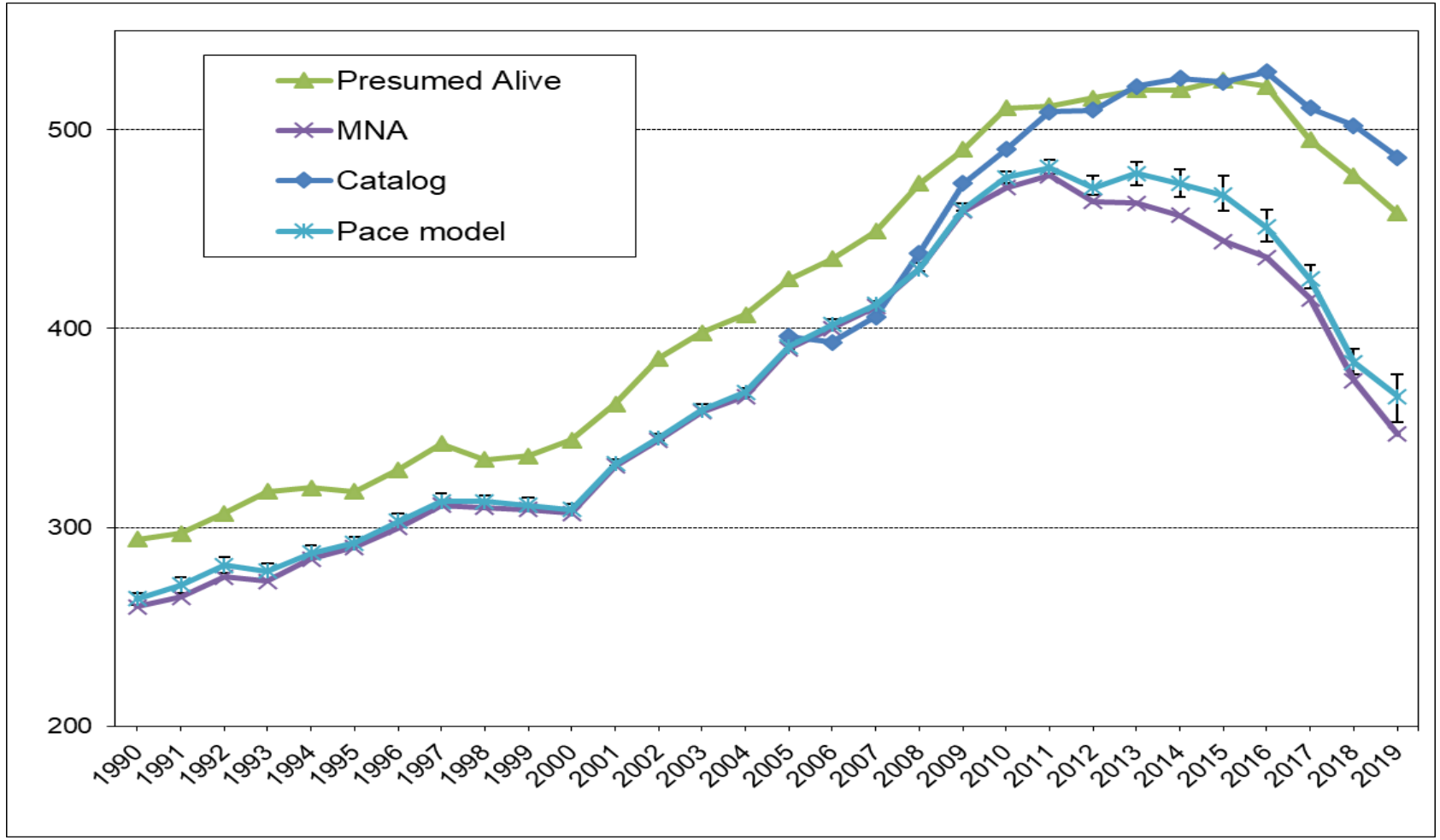
October 26, 2022

Bob Stern, Ph.D., President
Save Long Beach Island, Inc.
www.SaveLBI.org
Phone# 917.952.5016

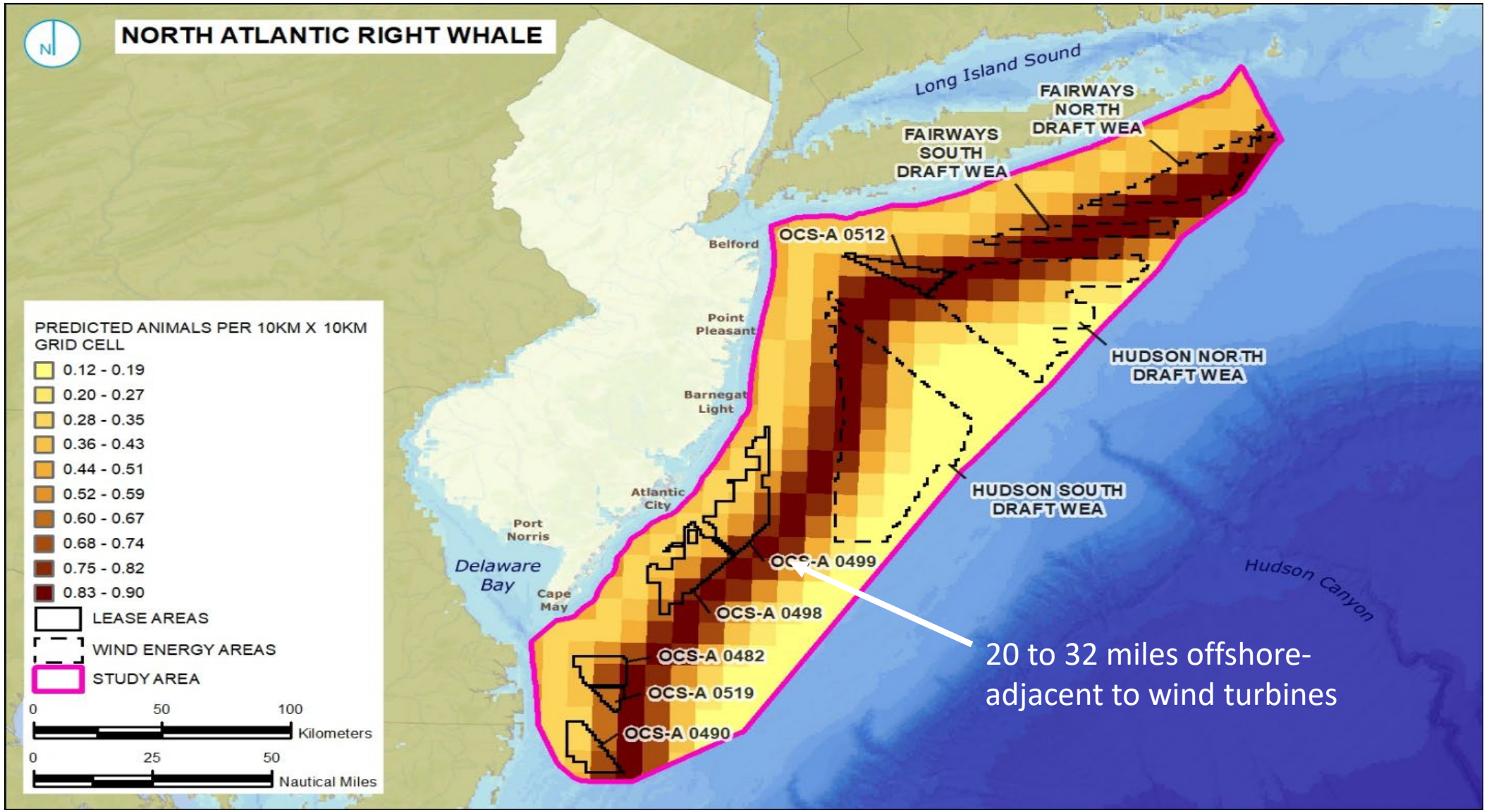
The Wind Project proposed off Long Beach Island(LBI), New Jersey

- Three hundred and fifty-seven 13.6 megawatt(mw) or larger, noisier, gearbox turbines, along the 18-mile LBI coast
- Closely spaced, 0.6-1.0 miles
- Up to 1046 feet high
- 9 to 20 miles offshore
- Tallest, closest, modern wind project in the world
- Adjacent to the primary migration corridor of the North Atlantic right whale, 20 to 32 miles out

Population Decline of the North Atlantic Right Whale



Primary Migration Corridor-North Atlantic right whale



Source, NJ Offshore Wind Strategic Plan, Natural Resource Technical Appendix, Figure 21.

Deriving Estimates of Operational Noise Source Levels for Larger turbines from Trends Observed for Smaller and Moderate Power Ones

Relying on two studies of measured noise levels versus turbine power:

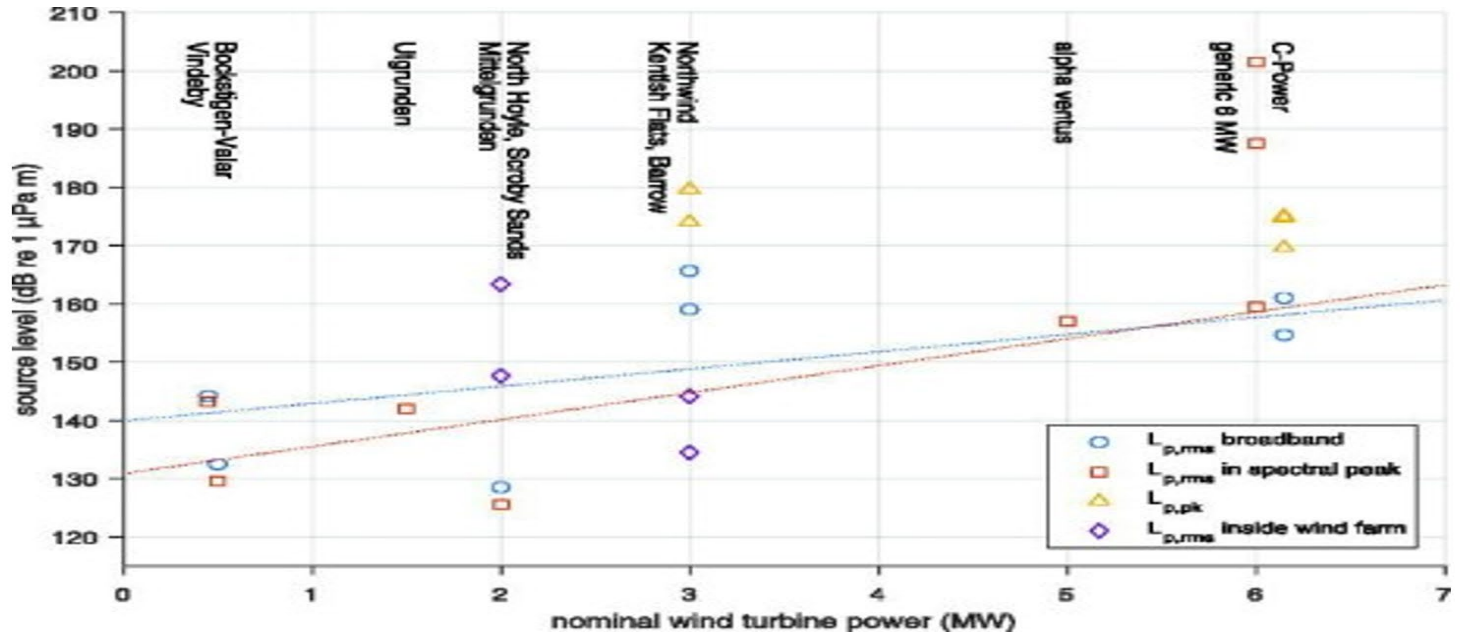
1. Uwe Stober and Frank Thomsen, How could operational underwater sound from future offshore wind turbines impact marine life? The Journal of the Acoustical Society of America 149, 1791 (2021)

- **Broadband Trend**
- **Spectral Trend, distinct to turbines, lower frequencies, closer to whale hearing**

2. Tougaard et al., How loud is the underwater noise from operating offshore wind turbines?, Journal of the Acoustical Society of America 148(5), November, 2020

- **Broadband Trends for Various Foundation Types**
- **Used the Trend for Steel Monopiles - to be used off New Jersey**

Stober: Increasing Underwater Noise with Turbine Power

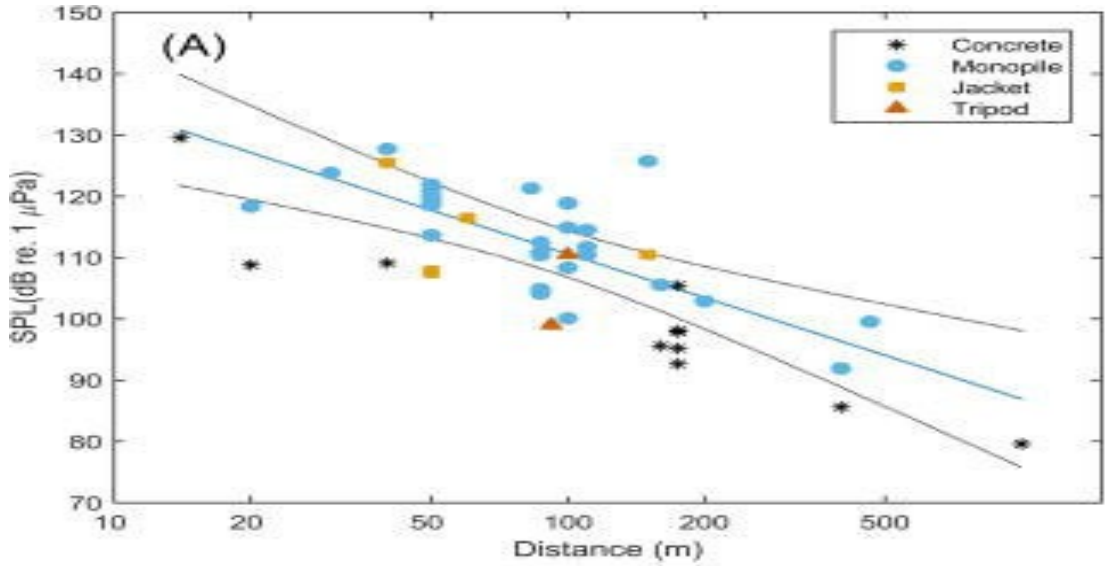


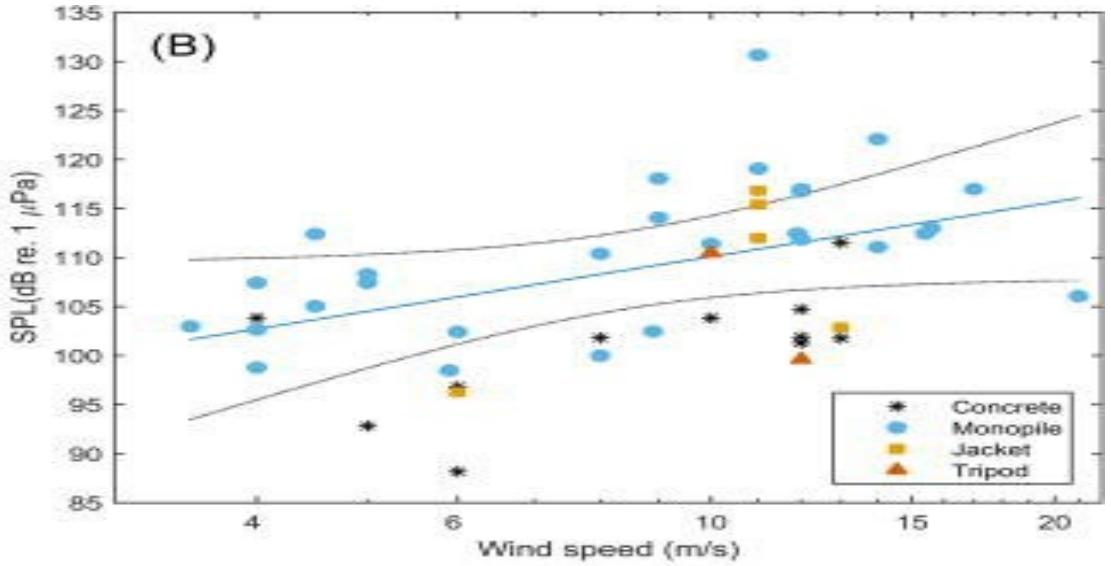
Extrapolated to 13.6 mw

FIG. 1. (Color online) Source SPLs versus nominal wind turbine power as listed in Table I. The names of wind farms or the dat a source are indicated at the top of the figure. Regression lines for broadband levels (blue) and sound levels at spectral peaks (red) show the increasing trend.

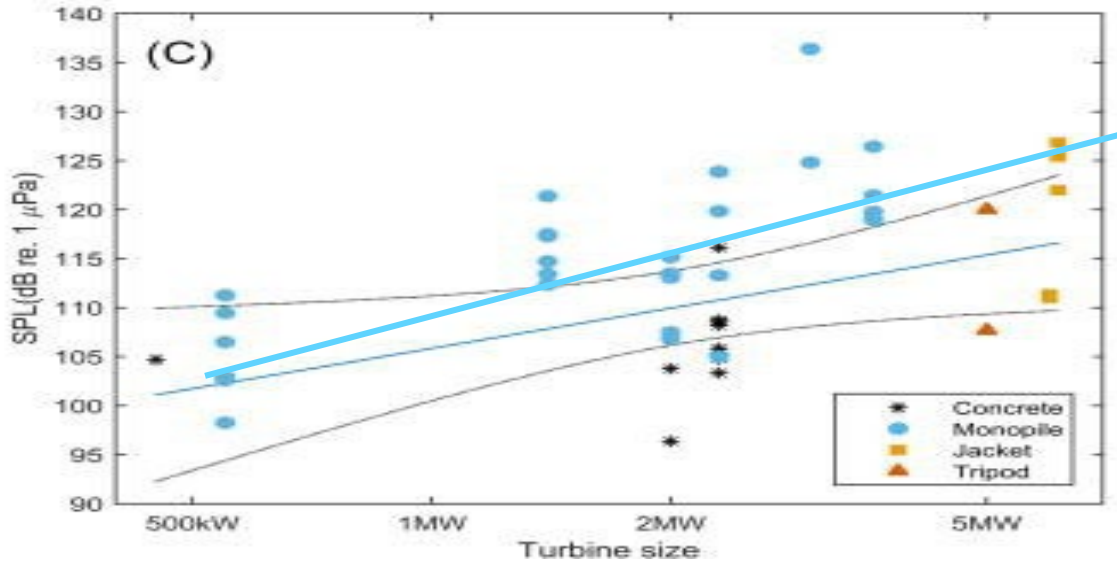
Published in: Uwe Stöber; Frank Thomsen; *The Journal of the Acoustical Society of America* **149,** 1791 -1795 (2021)
DOI: 10.1121/10.0003760

Tougaard Study





Sound Level at 100 meters vs Turbine Power



Monopile Trend Extrapolated to 13.6 mw, back-calculated to 1m

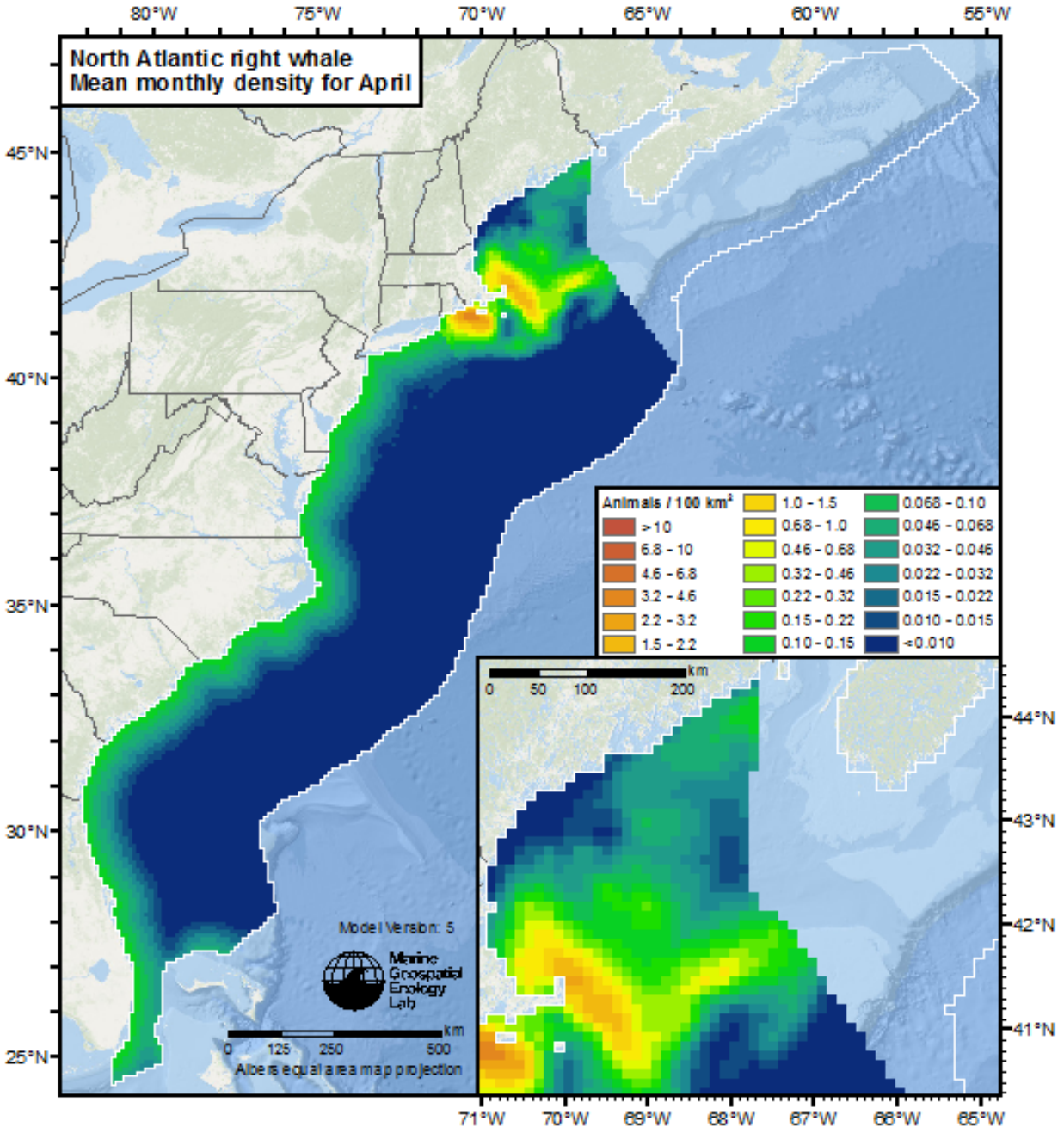
Estimated Noise Source Levels and Dissipation Distance

Study/Data Source	Source Level 1 turbine at 1 meter (dB)	Equivalent Source Level, 7 turbines at 1 meter (dB)	Distance to 120 dB* (miles)	Width of NARW migration corridor (miles, approx.)
Stober, broadband trend, projected to 13.6 mw turbine	180	188.3	22	12
Tougaard, monopile trend, projected to 13.6 mw	179.9	188.2	21.9	12
Stober, spectral trend, projected to 13.6 mw	192.2	200.5	144	12

* To the NMFS Continuous Noise Disturbance Criteria of 120 dB using practical noise loss formula, $15 \log_{10}(r/r_0)$

North Atlantic right whale-density in April

- Migration corridor off other states appears similar to NJ
- Corridor may intersect with other wind projects
- Noise impact may be similar-or worse.
- Needs closer and “cumulative” impact look.



Impact Summary & Next Steps

- Large turbine operational noise potentially exceeds behavioral disruption level throughout the right whale's primary migration corridor
- Apparent conflicts with the Endangered Species Act and Marine Mammal Protection Act
- Should be given more attention
- Additional noise measurement data welcome
- Consider turbine exclusion zones from the corridor
- Pursue large turbine pilot installation project-take noise measurements

References: Endangered Whales

W1.New Jersey Offshore Wind Strategic Plan, Environment and Natural Resource Technical Appendix, Figure 21, North Atlantic Right Whale. https://www.njcleanenergy.com/renewable-energy/programs/nj-offshore-wind/strategic-plan

W2.Uwe Stober and Frank Thomsen, How could operational underwater sound from future offshore wind turbines impact marine life? The Journal of the Acoustical Society of America 149, 1791 (2021); https://doi.org/10.1121/10.0003760

W3.Thomsen et al., The Effects of Offshore Wind Farm Noise on Marine Mammals and Fish, July 06 2006. https://seagrant.gso.uri.edu/oceansamp/pdf/presentation/present_gill_europe.pdf

W4.Madsen et al., Wind turbine underwater noise and marine mammals: implications of current knowledge and data needs, Marine Ecology Progress Series, Vol 309:279-295,2006 https://www.int-res.com/articles/meps2006/309/m309p279.pdf

W5.Nowacek et al., North Atlantic right Whales ignore ships but respond to alerting stimuli, The Royal Society, may 20, 2003.http://myweb.facstaff.wwu.edu/shulld/ESCI%20432/Nowacek2004.pdf

W6.Van Der Hoop et al., Foraging Rates of ram-filtering North Atlantic right whales, Functional ecology, Volume 33, pages 1290-1306. https://core.ac.uk/download/pdf/323987541.pdf

W7.NJDEP, Ocean/Wind Power Ecological Baseline Studies, Volume III, page 5-35, marine mammals, the right, fin and humpback whales https://www.nj.gov/dep/dsr/ocean-wind/Ocean%20Wind%20Power%20Ecological%20Baseline%20Studies_Volume%20Three.pdf

Save Long Beach Island, Inc.
P.O. Box 579, Ship Bottom, NJ 08008
www.SAVELBI.org

Enclosure II, Operational Turbine Noise

Comments by Save Long Beach Island, Inc. on the Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to the Atlantic Shores Offshore Wind Energy Projects Offshore of New Jersey, RIN 0648—XC092,

Need to Address in the ITA Rulemaking the Operational Turbine Noise Impact on the North Atlantic right whale-and other affected marine mammals.

The full action proposed and all of the alternatives would place up 357 extremely large wind turbines next to the primary migration corridor of North Atlantic right whale.

As shown below, it will very likely block its migration and jeopardize it continuing existence because that corridor would be permeated with noise levels above the 120 dB disturbance criteria from continuous, long term operational noise from the 13.6 megawatt and higher power gearbox turbines proposed.

Two excellent, consistent studies of *measured* noise levels from smaller and moderate sized turbines, showing a clear straight-line trend increase in turbine source noise level with turbine power were provided to the BOEM during the NOI comment period [NOI1] that can readily be used to estimate the noise source level of the proposed turbines and analyze and determine the extent of that noise permeation into the corridor. A subsequent document was provided to the BOEM addressing their questions on the studies [W20].

This is likely the worst impact of this proposal. It potentially could violate both the ESA and MMPA, and make the project not viable. But rather the ITA application presents no analysis of the problem at all.

This issue must be addressed in detail in a revised ITA application to allow for public comment and a professional treatment of it in any rulemaking. The necessary analysis is described below.

The project proposes turbine placement 9 to 20 miles offshore. The North Atlantic right whale's primary migration corridor here extends from about 20 miles to 32 miles offshore. That critically endangered whale must migrate through that corridor south/north each year between its calving and feeding grounds to survive. Its numbers are already low and recently are declining rapidly (Exhibit A). The noise emanating from the larger turbines to be used will extend across its entire corridor

at levels that will disturb its behavior, potentially blocking its migration and threatening its existence.

Given the severity of these impacts, the analysis of operational noise is perhaps the most important one to be undertaken and should have been or be presented in the ITA application, the Biological Assessment (BA) and the Biological Opinion (BO). To do that analysis the ITA application, BA and BO should have:

1. Described the precarious status of the right whale
2. Estimated the source noise levels of the turbines
3. Estimated the noise transmission loss and the distance over which noise levels are above criteria, using appropriate noise loss factors.

4. Disclosed available data on animal densities that would clearly show its primary migration corridor adjacent to the lease area,

5. Described the impact on the whale's migratory behavior from elevated noise in its primary migration corridor
6. Estimated animal "takes" i.e., the number of events during which an animal experiences noise above thresholds,

7. Determined the likelihood that those takes, especially Level B disturbances would block the right whale's migration

8. Presented a realistic and transparent assessment of the whale's reaction to those events particularly those that could result in serious injury or fatality,

9. Provided an analysis of how the masking of the right whale's communication by the turbines could impact its migration and/or result in serious injury or harm, and

10. provided pre-set take criteria to avoid a threat to the whales existence and .

compared the results in items 8 and 9 to it, and

11. provide take estimates for the sound-sensitive sub-population.

The ITA application does not present any of this as discussed below, but first by way of explanation, some technical back ground regarding underwater noise.

Technical Background, Underwater Noise, Marine Mammals, and the "Decibel". Underwater noise can adversely affect marine mammals, i.e., by causing physiological damage, hearing loss, and changes in behavior, which in turn can affect their ability to communicate, navigate, migrate, detect prey and predator, and reproduce.

The underwater noise energy reaching a marine mammal is measured in decibels(dB), often by the formula 10 times the logarithm of that energy. That means that a 10 dB increase in decibels, say from 130 to 140 dB does not

represent an eight percent increase in the noise energy received, but rather a tenfold increase.

Events where noise levels exceed criteria i.e., "takes" are generally calculated as the product of the area around the noise source where criteria levels are exceeded, multiplied by the density of the mammals in that area, multiplied by the time the noise source is present. The area where noise levels are exceeded is called the ensonified area, and is often estimated by another logarithmic formula.

That formula often expresses the reduction in noise level from the noise source to the mammal in terms of a "transmission loss" factor times the logarithm of the distance required for the noise to decrease to the criteria level. So, suppose that loss factor is 15 dB. Then, here again, an increase in the noise source level of 15 dB, from say 160 to 175 dB, doesn't change the distance required by nine percent but rather tenfold, i.e., it could require going from 100 to 1000 meters or from 1,000 to 10,000 meters.

Therefore, the area affected and the impact on marine mammals, or "takes", are extremely sensitive to those noise source levels and transmission loss factors, hence a focus on them in these comments.

1. The application should clearly show the precarious status of the right whale. The number of critically endangered North Atlantic right whales (NARW) is already low at 366 animals and in steep decline- Exhibit A. There are less than 94 females of reproductive age left.

2. Turbine operational source noise levels need to be disclosed.

Critical to the needed analysis is an estimate of the noise level emanating from the large turbines to be used. There are no measurements currently available from the larger turbines so the use of the best scientific data available requires that we rely on the trends shown by measurements from smaller and moderate -sized turbines.

Two such studies [W2, W17] exist that do that and show a clear linear trend of increasing noise source level with turbine power. That trend can be extrapolated out further to get an estimate of the noise level emanating from a larger turbine. A detailed noise impact analysis using the predicted source levels from those studies for 13.6 mw and higher power turbines must be done as described below.

Such an analysis is also required By CEQ NEPA rule §1502,21. which states that when essential information to a reasoned decision is not directly available, the agency must provide "a summary of existing credible scientific evidence that is relevant to evaluating the reasonably foreseeable significant adverse impacts on the human environment; **and the agency's evaluation of such impacts** based upon theoretical approaches or research methods generally accepted in the

scientific community". The extrapolation of results from clear trends is generally accepted in the scientific community.

The application should present estimates of the elevated underwater noise levels expected from the large gearbox turbines to be used based on two credible scientific studies [W2, W17] that show clearly increasing noise levels as the power of the turbine increases. Using those trends based on actual measurements the noise source level for the larger turbines can be estimated as shown below which is critical to analyzing the problem of the impact to the whales.

The application shoudl disclose the drive type of the turbines expected to be used and its relation to the expected noise source levels. The Atlantic Shores Construction and Operations Plan (COP) does not specify the power, manufacturer, or drive type of the turbine proposed to be used or the foundation type. But the New Jersey Board of Public utilities (BPU) approval of 1510 megawatts (mw) for Project 1 was based on the use of Vesta-236 13.6 mw turbines and monopile foundations [BG1]. We assume that Atlantic Shores is adhering to the conditions of the State's approval so our comments here are based on the use of those turbines and foundations. The COP also says that turbines up to 20 mw in power may be used making the illustrative noise impacts shown below far worse, and their omission in the DEIS even more egregious.

Using the Stober referenced study, **broadband noise source levels for those 13.6 mw gearbox turbines are predicted at 180 dB[W2]** using the root mean square trend line of Figure 1 of the study below, extrapolated out to 13.6 mw turbines, which is about 40 dB higher and 10,000 times* more intense than the noise from the smaller turbines.

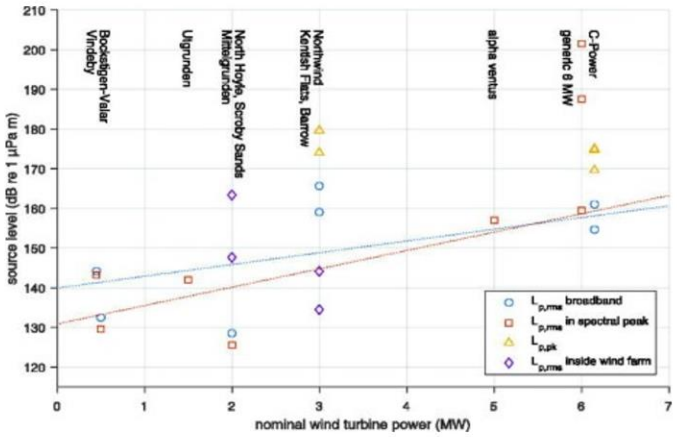
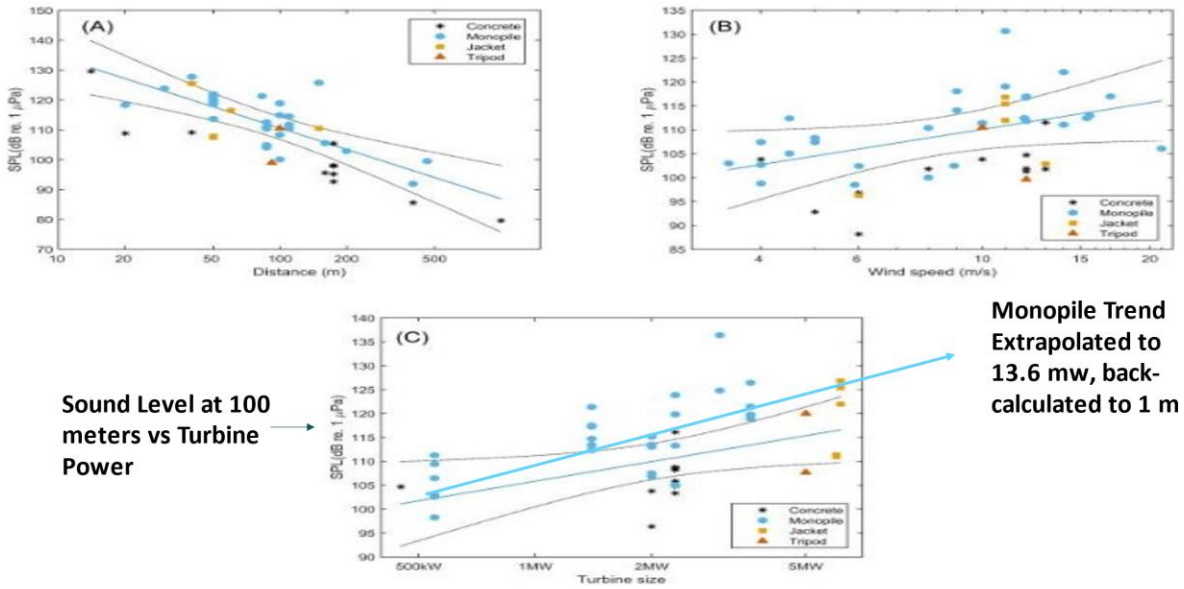


FIG. 1. (Color online) Source SPLs versus nominal wind turbine power as listed in Table I. The names of wind farms or the dat a source are indicated at the top of the figure. Regression lines for broadband levels (blue) and sound levels at spectral peaks (red) show the increasing trend.

Published in: Uwe Stöber; Frank Thomsen; *The Journal of the Acoustical Society of America* **149,** 1791 -1795 (2021)
DOI: 10.1121/10.0003760

The 180 dB source noise level is confirmed by the second Tougaard study [W17]. The authors there also tabulated, correlated and plotted broadband sound levels as a function of wind speed, power, and distance. Figure 3(C) below shows the trend in received noise level at 100 meters from the source versus turbine power for monopile foundations. Drawing a trend line through that monopile data and extrapolating it out to 13.6 megawatts results in noise level of 132.5 dB. Back calculating that from 100 meters to the turbine source at 1 meter adds 47.4 dB (page 21) resulting in a **179.9 dB noise source level, consistent with the Stober study.**

Tougaard Study



In study 1, following author Stober's suggestion, the spectral root means square line is actually a better indicator of the increase in noise level as turbine power increases, because it is more indicative of frequency range that the whale hears. Extrapolating that trend line in his Figure 1 out to 13.6 mw-for the Vesta-236 turbines to be used **results in a turbine noise source level of 192.2 dB**. (We used the more conservative estimate of 180 dB from the broadband trend line in our comments [(3)] on the NOI because it was sufficient to demonstrate our main point that the 120 dB marine mammal behavior disruption level would be exceeded from shore and through the entire wind turbine complex and the adjacent right whale's migration corridor).

So, the Stober and Tougaard studies are consistent, credible and reliable, and show that we are actually looking at turbine source **operational noise levels between 180 and 192.2 dB**. These source levels should have been used in the ITA appliocation to assess the operational noise impact on the whales.

3. **The distance to meet Noise Disturbance Criteria should be estimated**.

The application should analyze and disclose the distance necessary for source noise to fall below the 120 dB National Marine and Fisheries Service (NMFS) level B criterion for disrupting marine mammal behavior from continuous noise [(W4) (W5) (W6)]. Using the formula in the first study[W2] for transmission loss, $15 \log_{10} (r/r_0)$, it takes six miles[(W2) (W3)] for the noise from a single turbine with the more conservative source noise level of 180 dB to drop to 120 dB.

The 6-mile distance above is for a single turbine 180 dB source. At distances close to that source, it dominates the received noise level. But at distances 6 miles away the contributions from neighboring turbines become comparable and must be

considered. For example, with a one mile spacing, just the six other turbines closest to a receiver 6 miles away will add 8.3 dB to the received noise level, again using the 15 $\log_{10}(r/r_0)$ formula.

That is equivalent to having a single equivalent source for all seven turbines of 188.3 dB, and that requires 22.2 miles to bring that level down to 120 dB. This would envelop the entire 12-mile-wide right whale migratory corridor with noise above the 120 dB disturbance criterion. The same is of course true for the higher derived spectral noise source levels of 192.2 dB. These distances relative to the width of the right whales migratory corridor are shown below.

Table I.2.1 Distance to 120 dB criteria

Estimated Noise Source Levels and Dissipation Distance

Study/Data Source	Source Level 1 turbine at 1 meter (dB)	Equivalent Source Level, 7 turbines at 1 meter (dB)	Distance to 120 dB* (miles)	Width of NARW migration corridor (miles, approx.)
Stober, broadband trend, extrapolated to 13.6 mw turbine	180	188.3	22	12
Tougaard, monopile tend, extrapolated to 13.6 mw	179.9	188.2	21.9	12
Stober, spectral trend, extrapolated to 13.6 mw	192.2	200.5	144	12

* To the NMFS Continuous Noise DisturbanceCriteria of 120 dB using practical noise loss formula, 15 $\log_{10}(r/r_0)$

9

When the entire wind complex is considered, the zone of influence for behavior disruption will be even larger, and the sound levels within the migratory corridor more intense. Also, since the noise zone of influence is much larger than the turbine spacing of about a mile the 120 dB level will also be exceeded everywhere in the project lease area.

These distances and their associated areas should have been presented in the ITA application. That presentation should consider all the turbines proposed as sources, and provide tables and isopleths on maps showing the distances required for noise levels to decline to threshold criteria, superimposed on the right whale's primary migration corridor.

4. The proximity of the right whale's primary migration corridor to the project area should be disclosed. The presence of endangered whales in and near the project area and the use of larger gearbox turbines poses a significant operational noise problem.

In particular, the critically endangered North Atlantic right whale migrates just off the lease area and that migration, and its continued existence is threatened by these turbines. Robert's density data [W19] is available to show it.

The proposed action would place turbines 9 to 20 miles offshore. Based on the annual density data in Exhibit B1 the right whale's primary north/south migratory corridor starts about 20 miles out adjacent to the project area, and is about 12 miles wide, extending to 32 miles out.

The presence of their primary migratory path is further confirmed by Figure 9 of Atlantic Shores Offshore Wind's own application for an MMPA ITA rulemaking shown in Exhibit B2. The density map there for winter shows that the migration corridor intersects the project area and extends about 12 miles southeast of it. The density map for spring shows an even narrower migration corridor adjacent to the project area of about 5 miles. The presence of the primary corridor is further confirmed in exhibit B3.

This is essential information necessary to reach a reasoned conclusion on the severity of the impacts of this project, and the application should have presented the Robert's density data for the right whale in the area for each month in map form which is already readily available

The application should also show that endangered fin and humpback whales frequent the inner part of the project area, distances out to 11.5 miles (Exhibit C).

5. The impact on the Whales from operational turbine noise should be addressed in the application.

The noise levels described above create a "wall" of noise across the turbine complex and the whale's migration corridor, potentially blocking it.

It will be extremely difficult for the whales to avoid that expanse of elevated noise and continue their migration. Attempting to do so could expose them to high cumulative sound exposures potentially exceeding hearing threshold shift criteria, cause loss of communication between and separation of females from calves, stranding, and loss of echolocation and other navigational abilities.

Experiments have shown [(W5)] that one reaction of the right whale to such sound disturbances is to ascend and swim just under the surface where it is vulnerable to vessel strike. The proposed use by the Coast Guard [(BG2)] of the right whale's

migration corridor as a new deep draft vessel lane (Exhibit D) would significantly increase the risk of vessel strike once it ascends.

Subsequent planned turbine placement along the inner part of the Hudson South area would only elevate the noise levels in the corridor and worsen the problem.

Mitigating measures involving detection and turbine shut down are not viable for the large noise influence zones and multi-year operational time frames here, leading to the need to re-consider this lease area as unsuitable for large turbine placement.

6. The application should present scientifically defensible numerical animal "take" estimates for the right whale -for either direct harm (Level A) or disturbance (Level B).

It should combine the elevated noise areas and right whale densities particularly in its primary mitigation corridor to determine the number of instances that would disturb its behavior

Given the high noise levels at the turbine source and the proximity of the right whale's primary migration corridor the number of takes compared to the whales population is likely to be quite large.

While there are uncertainties regarding some of the whale's reactions to such disturbances there is consensus that a primary reaction is to try to avoid the noise., which could jeopardize its migration.

In calculating these take estimates, the application should address statistical confidence. The current procedures using only mean estimates of key parameters to estimate animal take and harm are not mathematically sufficient to meet its charge in the case of a critically endangered species that cannot afford the loss of a single additional animal.

Current practice by BOEM and NMFS uses mean estimates, for example, for animal density and travel speeds. While such mean estimates are informative, they leave open the question that the harm conclusion could be worse than predicted for half of the plausible scenarios. Therefore, the mean estimates don't directly address the problem of determining extinction which as discussed above for the right whale depends on adverse outcomes for only a few animals.

In mathematical terms what is important to know here is the behavior of the tail end of a statistical distribution, as opposed to the average or mean. Therefore, BOEM needs to augment its current procedures and inject the probability of worser outcomes to provide closer to 95 percent or two standard deviation confidence in its conclusions. It's recognized that certain aspects here do not lend themselves to precise statistical distributions but there are steps that can be taken to make the calculations and conclusions more relevant.

7. The application should assess the likelihood that those take events will block the right whale's migration.

Previous analysis of turbine installation involving one or two discrete pile driving sources assumed that a whale approaching a source above the behavior disruption level could veer to the left or the right, find an "noise open route" and proceed on its migration.

Here, given the elevated noise levels above the 120 dB criterion throughout the wind complex and across their entire migration corridor it will be very difficult for the whales to avoid the noise disturbance and continue their migration. Attempting to do will expose them to high cumulative sound exposures potentially exceeding hearing threshold shift criteria, loss of communication between and separation of females from calves, stranding, and loss of echolocation and other navigational abilities.

Masking of its communications risks the separation of females from calves during migration [W13, W14]. Its echolocation and navigation ability will be impaired [W16], while trying to find a noise open route to continue its migration. Whales seeking to avoid the noise by going closer to shore risk stranding and elevated sound exposure levels as mentioned above.

Consider a whale traveling north approaching the migratory corridor between the project area and Hudson South.

In an effort to continue its migration, it might tolerate the noise disturbance and continue its 25-mile, 30-hour journey (@1.3 km/hr.) past the complex, incurring an additional sound exposure of 50 dB, for total levels likely exceeding the NMFS sound exposure level (SEL) criteria for temporary or permanent threshold hearing loss [W11]. It might veer west and travel north through the wind complex, incurring similar exposures.

But it is far more likely that it would try to avoid the elevated sound. Traveling due west to avoid the noise disturbance would require it to go all the way to shore because the zone of influence goes that far. Traveling east to avoid the disturbance requires it to find a noise open route through the Hudson South area, and once turbines are placed there that will not be possible. It would then have to go all the way around Hudson South and find a new route, all the while incurring long exposure times.

A recent in-depth review of behavior response studies titled, A systematic review on the behavioral responses of wild marine mammals to noise: The disparity between science and policy, November, 2016, identified a number of studies specifically associated with whale traveling, migrating, and directional swimming. NMFS should review those studies for applicability here and present the results. The burden of technical support here on NMFS is the same as discussed above for direct serious injury or fatality, it must show with high confidence that not a single whale is prevented from completing its essential migration.

The application should present the potential that its migration will be blocked. Common sense dictates that under this expanse of high, multiple noise sources and the unattractive avoidance options discussed above, it is likely that there will be at least some of the animals exposed above 120 dB who will have their migration impaired or blocked entirely, and others that will be subjected to prolonged exposure above that level, undergo stress [W12] and be seriously injured or killed from the reactions and communications masking discussed below.

8. The application should present a plausible, transparent analysis of reaction to behavior disturbance events & potential harm or fatality outcomes.

Regarding such an analysis, The BOEM and NMFS traditionally do two analyses and compute level A and Level B takes. A third, comparable level analyses, is needed.

A level A harassment analysis calls for an assessment of the potential to injure a marine mammal or a marine mammal stock in the wild.

A level B analysis calls for an assessment of the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including but not limited to migration, breathing, nursing, feeding, or sheltering.

The two analyses try hard to separate Level A injury from Level B harassment. But in the real, whale, world that distinction is not so clear, and lesser exposures can indirectly lead to worser outcomes. That linkage is also present in the December 21, 2016, NMFS interim guidance, defining the term "harass," under the Endangered Species Act (ESA), as to "create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering."

The NEPA also demands a full analysis of these reasonably foreseeable real-world paths, particularly in the case of the North Atlantic right whale where serious injury or death to only one animal can spell extinction for the species.

Therefore, the application should assess this third path or linkage from reactions to level B harassment exposures and from masking of the whale's sound detection and communication abilities, to serious harm or fatality with a level of analyses comparable to that given to Level A and Level B takes.

Such paths include reactions to noise stimuli causing right whales to ascend and swim just below the surface where they are more vulnerable to vessel strike, not just from survey vessels, but from other vessels as well. This behavior has in fact been demonstrated experimentally by Nowacek et al [W5].

The proposed use [W15] of the migration corridor as a new deep draft vessel lane (Exhibit D) would also significantly increase the risk of vessel strike once it ascends

and struggles to find a new migration route. Subsequent planned turbine placement along the inner part of the Hudson South area worsens the situation.

In our comments on the NOI to prepare the EIS we recommended that the BOEM, National Marine and Fisheries Service (NMFS), and the Coast Guard collaborate on a joint study to assess the synergistic impact on the right whale from the long-term operational noise of the offshore wind projects foreseen, and the use of its migratory corridor as a deep draft vessel lane, and include the results in the draft EIS, Incidental Take Regulation (ITR), Biological Assessment and Opinion.

Reactions to above Level B exposures could involve stress and distress. An animal's perception of a threat may be sufficient to trigger stress responses consisting of some combination of behavioral responses, autonomic nervous system responses, neuroendocrine responses, or immune responses.

Autonomic nervous system responses to stress typically involve changes in heart rate, blood pressure, and gastrointestinal activity, have a relatively short duration and may or may not have a significant long-term effect on an animal's fitness.

Neuroendocrine stress responses have been implicated in failed reproduction, altered metabolism, reduced immune competence, and behavioral disturbance. During a stress reaction, if an animal does not have sufficient energy reserves to satisfy the energetic costs of a stress response, energy resources must be diverted from other normal functions, leading to distress situation. This state of distress will last until the animal replenishes its energetic reserves sufficient to restore normal function. Studies in the Bay of Fundy found that noise reduction from reduced ship traffic was associated with decreased stress in North Atlantic right whales leading to a reasonable expectation that some of its normal functions, including its migration, could be impaired from higher level exposures.

9. The application should show how the masking of the whale’s communications from operational noise could impair or prevent its migration leading to serious injury or death.

The whales use sound to navigate along their migration. It also appears that their migration is aided by their capability to communicate with each other along the way. The impacts of the masking of those communications in causing serious harm or fatality, including the impact from the obstruction or delay of the right whale’s migration, should be analyzed in the application, as it has direct implications on their survival as a species.

One path to such injury involves separation of calves from mothers as a result of masking of their communication from elevated noise levels. Such communications can employ low-amplitude signals susceptible to masking as discussed in the report, Acoustic crypsis in communication by North Atlantic right whale mother–calf

pairs on the calving grounds, Susan E. Parks, Dana A. Cusano†, Sofie M. Van Parijs and Douglas P. Nowacek, Published:09 October 2019.

The right whale's vocalizations are normally at the 125 dB rms level for low background noise, but can rise to 150 dB in the presence of high background noise (Parks et.al., The Royal Society, Individual right whales call louder in environmental noise, July 7, 2010).The potential for loss of mother/calf communication was presented in, Acoustic propagation modeling indicates vocal compensation in noise improves communication range for North Atlantic right whales, Jennifer B. Tennessen, Susan E. Parks, June 15, 2016.

Using the higher 150 dB source call level in that study for a whale upcall, and the 15 dB loss factor, mother/calf communications could be blocked out to a distance of 1.3 miles from a set of 7 turbines with a noise source level of 191.4 dB as discussed above. More typical vocalizations of 125 dB would be masked throughout the entire migration corridor.

10. The application should present criteria specific to the North Atlantic right whale to determine negligible impact, small numbers impacted, and to avoid jeopardizing its existence.

The numbers of NARW are already very low at 366 animals and in steep decline-Exhibit A. There are less than 94 females of reproductive age left. The NMFS 2020 stock assessment report for the NARW shows an average per female productivity rate of 0.06 for the years 2013 to 2017, Figure 4. It also shows (Figure 2a) an average female population of 180, leading to 11 average births per year. Table 2 shows estimated human caused fatalities at an average of 18.6 per year for that period.

According to the International Fund for Animal Welfare [W10], over the past five years from 2016 through 2020, 17 whales died on average per year from human actions. During that same period 7 whales were born on average per year.

Clearly, with a human caused death rate (not including natural mortality) about twice the birth rate and a net loss of 8 to 10 whales per year, current mitigating and recovery measures are not sufficient to protect the whale, and any additional serious injury or fatality would "jeopardize" it under the meaning of that word which is to put (someone or something) into a situation in which there is the possibility of suffering loss, harm, injury or failure.

Therefore, the only sensible and scientifically credible criterion for the NMFS to adopt for the right whale is one of zero tolerance for any fatality or serious injury during its migration from turbine noise, and the application must show through the analyses described above that that criteria is met with high statistical confidence.

11. The application should provide Take Estimates for the Sound-Sensitive Population.

As discussed above, the precarious state of the North Atlantic right whale and the very low biological removal rate requires the NMFS show with high statistical confidence that not a single whale will be seriously harmed or killed as a result of a project approval.

Take estimate analysis to date have not done that. They rely on mean estimates of animal density, vessel and animal speeds and other factors. They also use the 160 dB criteria for impulsive noise and 120 dB criteria for continuous noise which are based on observations affecting the most sensitive half of the species, which as explained below can significantly underestimate the number of animal takes.

That sensitive population analysis must start with an acknowledgment by the BOEM and the NMFS that that a sensitive sub population will be affected at levels below 160 and 120 dB respectively. Although the density of that sensitive population is less, the distance required to meet those lower dB numbers increases exponentially, and for point sources the area affected increases by the square of the required distance.

So, it quite possible that the product of the lower density and much higher area affected or the number of takes will be much greater than that calculated using the 50 percent affected criteria. The NMFS needs to include such an analysis in its take estimates.

Conclusions Regarding Turbine Operational Noise

Given all the above and noting that detection and shut down procedures are unreliable for the noise reduction distances and the 20-year time periods for turbine operation here[(W8)], the only reliable measure would be turbine exclusion zones. However, since the width of the project area, 10 miles, is less that the greater than 22-mile noise zone of influence, there is no place in this lease area for turbine placement that is compatible with protecting the right whale's migration, or preventing fin and humpback whales from being driven to shore. This is obviously a critical turbine noise impact issue that must be addressed in the application and rulemaking.

Exhibits

Exhibit A, North Atlantic Right Whale Population

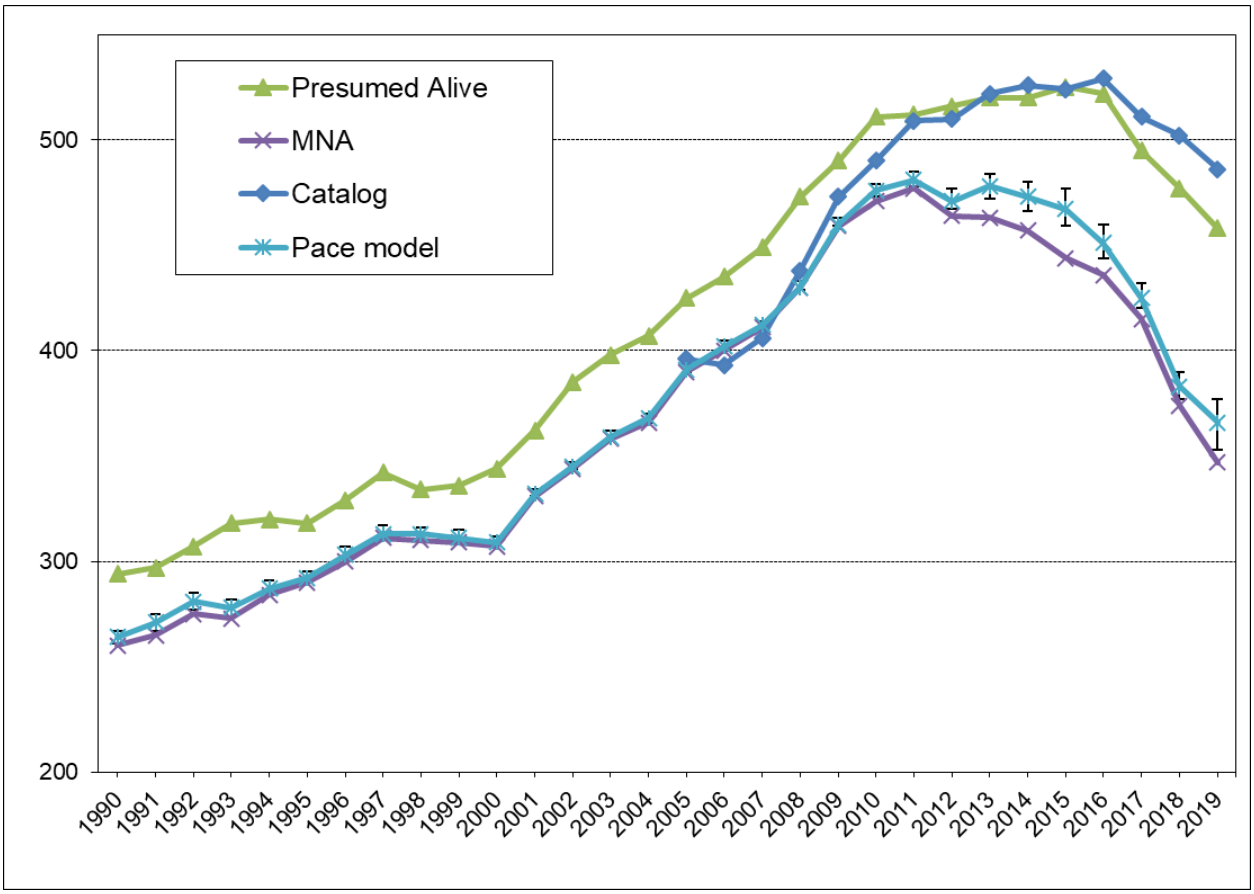
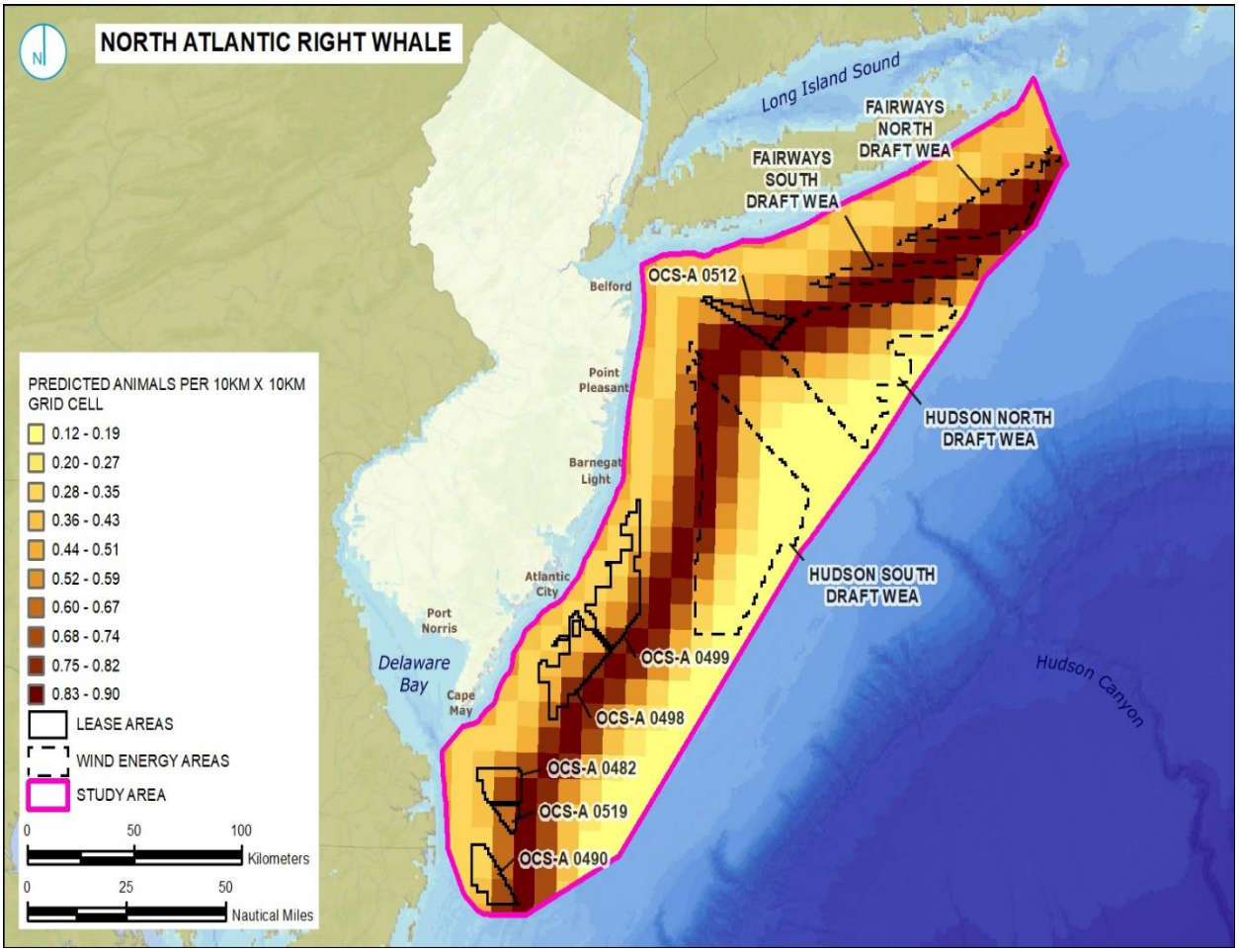


Exhibit B1, North Atlantic right whale migration corridor-Annual Density



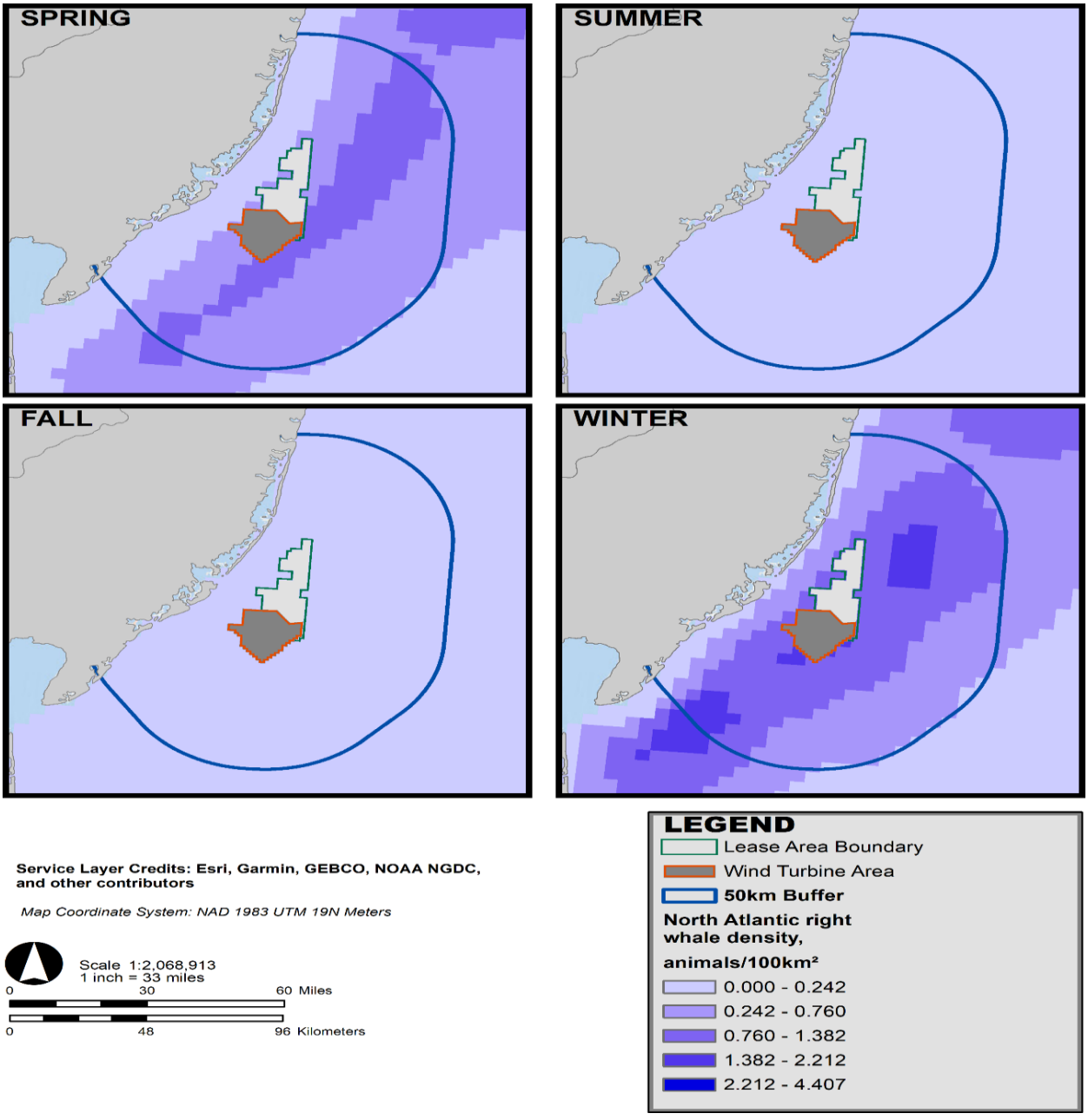
Key Points: The annual abundance of the NARW is highest in the study area at depth contours between 30 and 40 meters, at up to 0.9 animals per 100 km2. Areas that are shallower (as well as much deeper) than this range show less relative density, including significant portions of existing wind lease areas and WEAs. The NARW high abundance areas are present in all lease areas and draft WEAs but do not exceed 0.9 individuals per 100 km2.

Source, NJ Offshore Wind Strategic Plan, Natural Resource Technical Appendix, Figure 21. Section 2.6.3, Cetaceans Subgroup Inputs Cetacean subgroup figures display cetacean abundance data from the MDAT mammal abundance technical report from Duke University-see below. The individual species maps represent the results of distance sampling modeling methodology applied to over 20 years of aerial and shipboard cetacean surveys, linked with remote sensing and ocean model environmental covariates. Cetacean models were created for the entire US East Coast and southeast Canada. The data was provided by the MDAT as a grid consisting of 10 km x 10 km cells.

MARINE-LIFE DATA AND ANALYSIS TEAM (MDAT) TECHNICAL REPORT ON THE METHODS AND DEVELOPMENT OF MARINE-LIFE DATA TO SUPPORT REGIONAL OCEAN PLANNING AND MANAGEMENT Authors: Corrie Curtice, Jesse Cleary, Emily Shumchenia, Patrick Halpin Prepared on

behalf of The Marine-life Data and Analysis Team (MDAT): Patrick Halpin (Principal Investigator, Duke University), Earvin Balderama (Co-I, Loyola University Chicago), Jesse Cleary (Duke University), Corrie Curtice (Duke University), Michael Fogarty (Co-I, NOAA/NEFSC), Brian Kinlan† (NOAA/NCCOS), Charles Perretti (NOAA/NEFSC), Marta Ribera (TNC), Jason Roberts (Duke University), Emily Shumchenia (NROC), Arliss Winship (Co-I, NOAA/NCCOS) **Date published: 24 June 2019** **Project manager and point of contact: Jesse Cleary, Marine Geospatial Ecology Lab, Duke University, Durham, NC 27708 em: jesse.cleary@duke.edu ph: 919-684-3660 w: mgel.env.duke.edu** **Accessible from: http://seamap.env.duke.edu/models/MDAT/MDAT-TechnicalReport.pdf**

Exhibit B2, North Atlantic Right Whale Densities



Source: Atlantic Shores Offshore Wind Application for Marine Mammal Protection Act (MMPA) Rulemaking and Letter of Authorization Prepared by: JASCO Applied Sciences (USA) Inc. September 2022 Submitted to: Permits and Conservation Division, Office of Protected Resources, NOAA Fisheries, Figure 9. North Atlantic right whale maximum seasonal density from Roberts et al. (2016a, 2021a, 2021b-see below).

Roberts, J.J., B.D. Best, L. Mannocci, E. Fujioka, P.N. Halpin, D.L. Palka, L.P. Garrison, K.D. Mullin, T.V.N. Cole, et al. 2016a. Habitat-based cetacean density models for the U.S. Atlantic and Gulf of Mexico. Scientific Reports 6. https://doi.org/10.1038/srep22615.

Roberts, J.J., B. McKenna, L. Ganley, and S. Mayo. 2021a. Right Whale Abundance Estimates for Cape Cod Bay in December. Version 3. Report by the Duke University Marine Geospatial Ecology Lab, Durham, NC, USA. https://seamap-dev.env.duke.edu/seamap-modelsfiles/Duke/EC/North_Atlantic_right_whale/Docs/CCB_December_Estimates_v3.pdf.

Roberts, J.J., R.S. Schick, and P.N. Halpin. 2021b. Final Project Report: Marine Species Density Data Gap Assessments and Update for the AFTT Study Area, 2020 (Opt. Year 4). Version 1.0. Report by the Duke University Marine Geospatial Ecology Lab for Naval Facilities Engineering Command, Atlantic Durham, NC, USA. https://seamap-dev.env.duke.edu/seamap modelsfiles/Duke/Reports/AFTT_Update_2020_Final_Report_v1.0_excerpt.pdf.

Exhibit B3. Right Whale Density for March

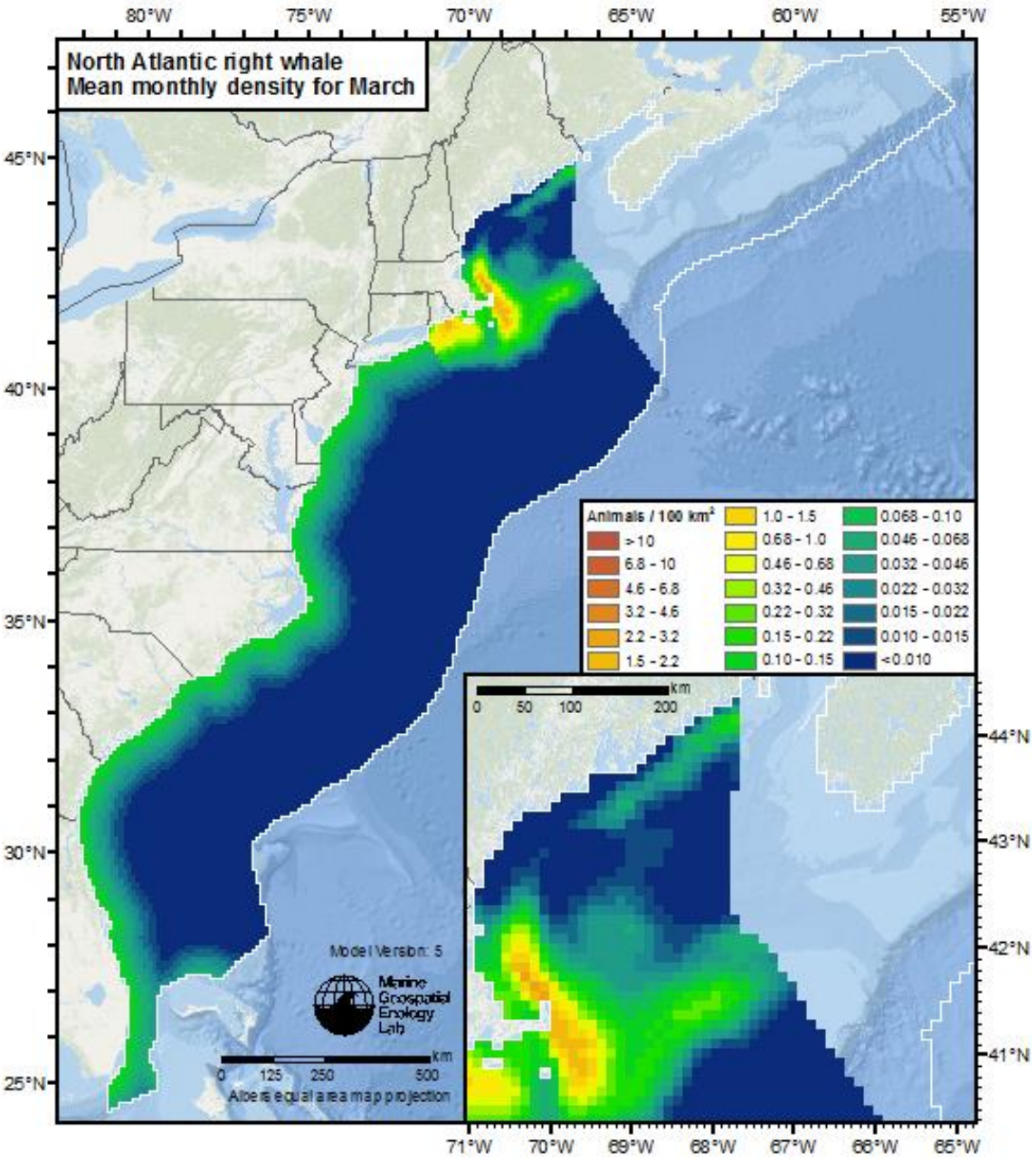
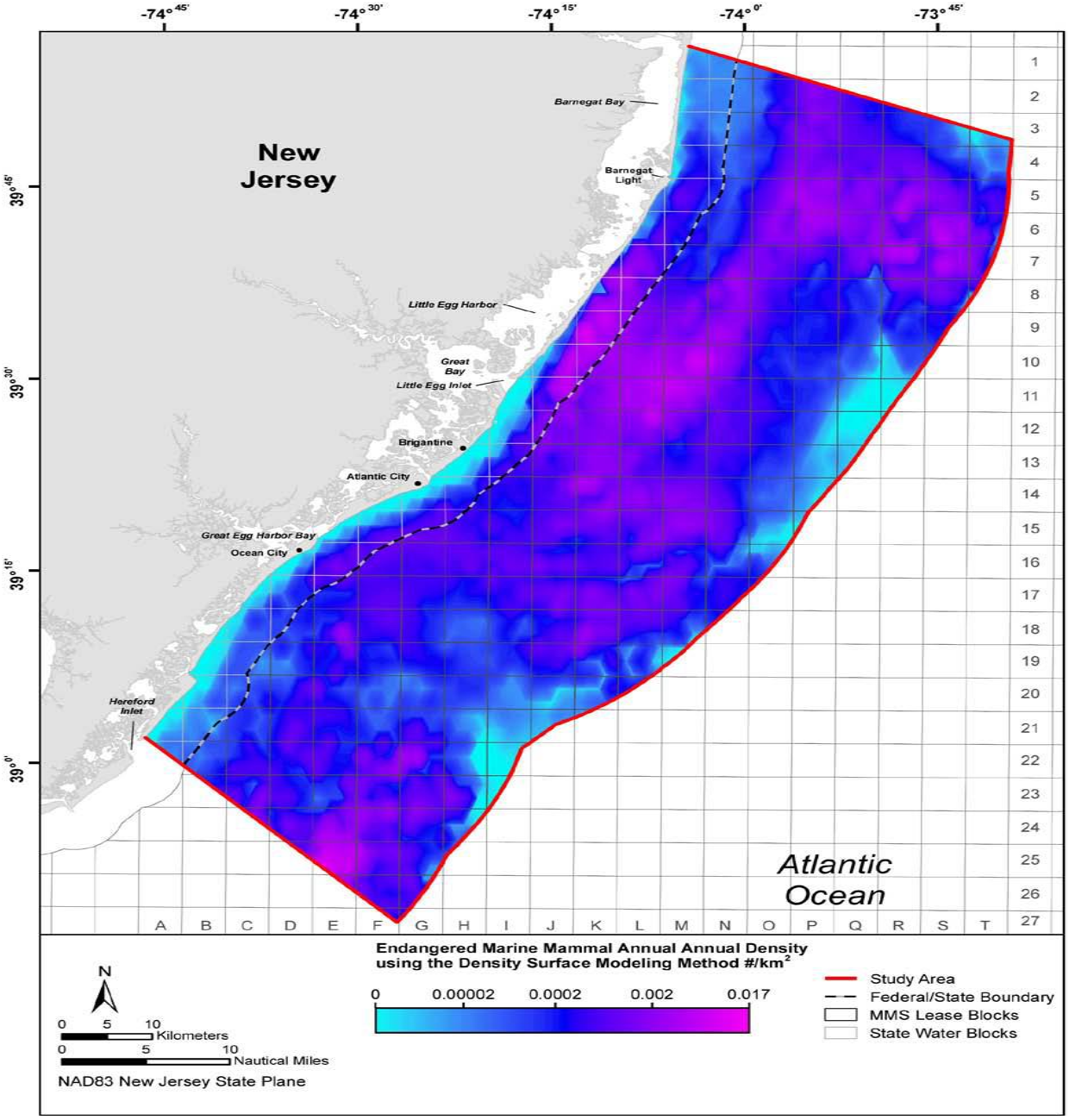


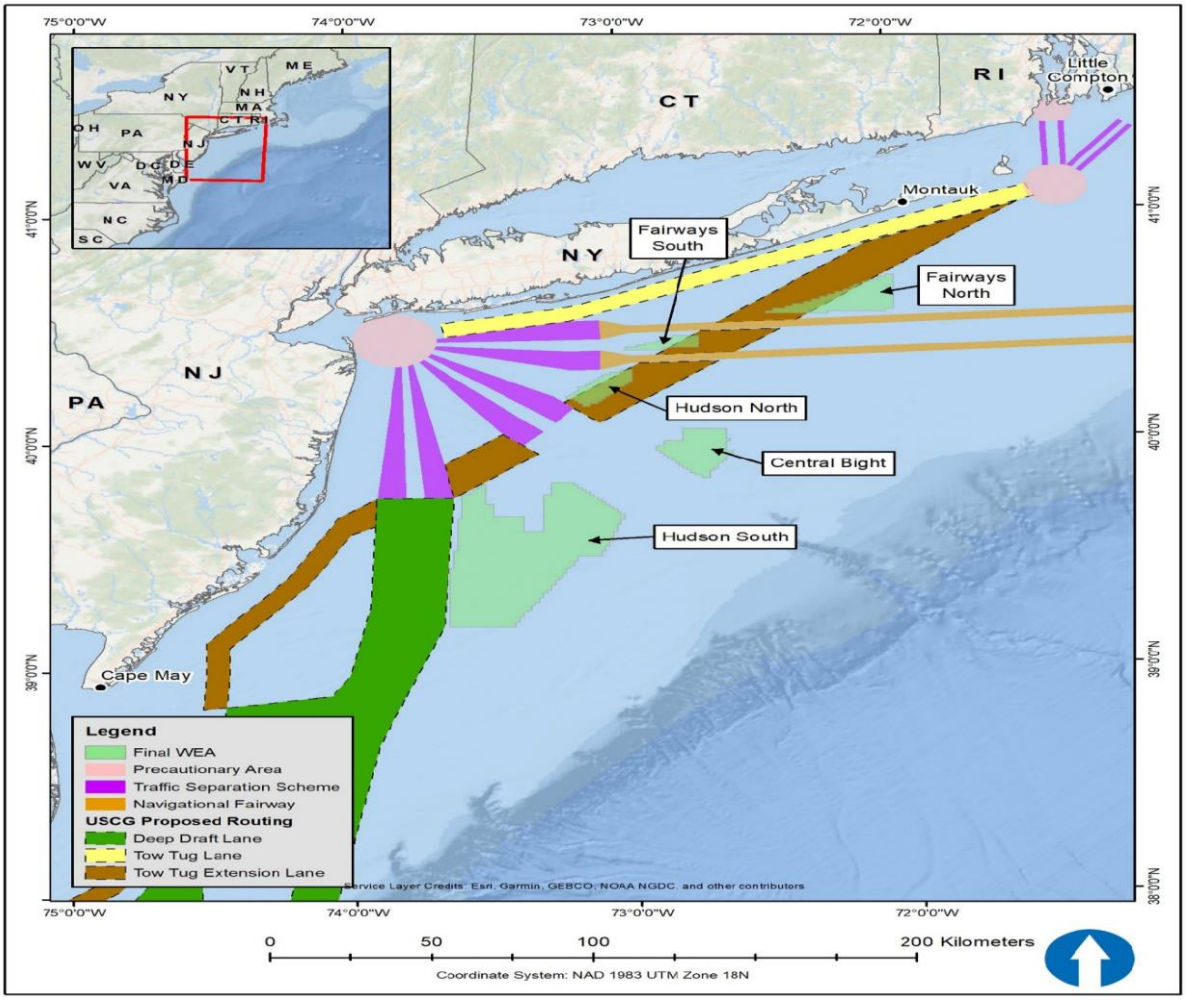
Exhibit C, Fin and Humpback Whale Density



Source, NJDEP, Ocean/Wind Power Ecological Baseline Studies, Volume III, page 5-35, marine mammals, the right, fin and humpback whales https://www.nj.gov/dep/dsr/ocean-wind/Ocean%20Wind%20Power%20Ecological%20Baseline%20Studies_Volume%20Three.pdf

(Dominated by fin and humpback densities)

Exhibit D, Deep Draft Vessel Lane



Source; BOEM, Commercial and Research Wind Lease and Grant Issuance on Site Assessment Activities on the OCS of the NY Bight, Draft EA, August, 2021, page 41 and Figure 9.

Save Long Beach Island, Inc.
P.O. Box 579, Ship Bottom, NJ 08008
www.SAVELBI.org

Enclosure III, Need for New Vessel Survey Noise Calculation Methodology

Comments by Save Long Beach Island, Inc. on the Taking and Importing Marine Mammals; Taking Marine Mammals Incidental to the Atlantic Shores Offshore Wind Energy Projects Offshore of New Jersey, RIN 0648—XC09.

The Atlantic Shores ITA Application for Construction and Related Activities uses the same methodology for assessing vessel survey noise impact as for the previous vessel surveys presented below. Therefore, the comments below on that methodology are relevant to the ITA application and we ask that they be considered prior to the NMFS proceeding to any rulemaking.

Introduction & Summary

The National Marine fisheries Service (NMFS) has approved two high resolution geophysical noise surveys, for the Ocean Wind II and Atlantic Shores companies, and is expected to approve a third for Next Era Energy. These three surveys will take place during similar time periods and similar geographic areas. In total, as shown below in Table 1 they will perform 953 survey days in a year.

Using a realistic, scientifically supported, noise propagation loss formula that the NMFS has used in a number of other incidental take authorizations they will result in 187 level B "takes" i.e., disturbances of the North Atlantic right whale behavior, as it does or attempts to do, a north/south migration that is essential to its survival.

Table 1, Cumulative Level B Takes (Whale Behavior Disruptions)

Survey	Survey Days	Vessel travel per day (km)	Radius to 160 dB (meters) 20 dB loss factor	Radius to 160 dB (meters) 15 dB Loss factor	Level B Takes (20 dB) # of whale disturbances	Level B Takes (15 dB) # of whale disturbances
Atlantic Shores	360	55	141	736	17	95
Ocean Wind	275	70	141	736	9	47
Next ERA	318	62	141	736	8	45
Totals	953				34	187

That number constitutes 53 percent of the right whale population (now adjusted by NMFS to 350 animals) and exceeds even the NMFS high and unsupported "small numbers" criteria of 33 percent of the population (see section B.8). Using the 15 dB factor and a higher noise source level found in the technical literature for the controlling noise device the Atlantic Shores survey alone would exceed the 33 percent.

These NMFS approvals, despite numerous examples in the scientific literature(some explained below) of how such disturbances can lead to worser outcomes, ultimately rely on the supposition that not one of those 187 disturbances will impair, delay, or block the migration of, or otherwise cause serious harm or death to a single animal, which is what is required to show in the case of the critically endangered right whale. If such a large number of level B disturbances to a critically endangered species are so innocuous, it raises the question of why we even have level B criteria and go through the exercise of calculating animal "takes".

Rather, we suggest the logical alternative, that these approvals are not technically, scientifically or mathematically supportable. In reaching them, the NMFS (a) does not sum up and consider the cumulative impacts of multiple surveys occurring in similar geographical areas and time periods, (b) ignores data in the technical literature of higher noise source levels for the controlling sparker unit, (c) uses a high scientifically unsupported noise loss factor that significantly underestimates distances to meet criteria and animal takes, and that is inconsistent with factors it has used in other recent authorizations, (d) does not thoroughly analyze the potential for level A takes or the ways that reactions to level B takes can result in serious harm or fatalities,(e) uses a scientifically and legally unsupported allowed percentage of animal takes that is mathematically inconsistent with other criteria related to potential biological removal, and (f) does not include all measures to achieve the least practical adverse impact such as obvious ones of avoiding survey activities in the North Atlantic right whale's primary migration corridor during its primary migration months.

In addition, NMFS does not find sufficient cause for concern to employ procedural changes that would shed light on these problems. It will not prepare an environmental assessment under the National Environmental Policy Act, do a Letter of Authorization rulemaking, or have relevant and up to date Endangered Species Act documentation prepared.

The issues herein have been raised to the NMFS previously and most responded to. Our observations regarding those responses are provided below in *italics*. We continue to believe that the concerns raised are sound. They are presented below in depth along with conclusions and recommendations to correct this unfortunate situation.

Legal Framework. Whales, dolphins, and porpoises have finely tuned senses of hearing, on which they rely to navigate, seek food, avoid danger, and communicate among themselves. Many species of these animals are vulnerable to human

activities—a vulnerability that prompted Congress to enact the Marine Mammal Protection Act ("MMPA") in 1972.

The MMPA generally bars actions that kill or injure marine mammals (such as whales, dolphins, and porpoises) or disrupt their behavioral patterns. It allows the authorization of "incidental harassment" of "small numbers" of marine mammals in limited circumstances, however, if such harassment will have only a "negligible impact" on a species or population stock. 16 U.S.C. § 1371(a)(5)(D)(i). Actions that may involve serious injury or fatalities require authorization through rule making per § 1371(a)(5)(A). And when incidental authorizations constitute major federal action, they are subject to the requirements of the National Environmental Policy Act ("NEPA"), 42 U.S.C § 4321 et seq., and its implementing regulations.

For marine mammal species listed and protected under the Endangered Species Act ("ESA"), any authorized harassment or taking may occur only in accordance with an incidental take statement contained in a valid biological opinion, and only if it does not jeopardize any protected species' continued existence. Id. § 1536.

The Incidental Harassment Authorization (IHA) for the Atlantic Shores project survey, allowing for high intensity noise surveys along most of the New Jersey coast, will, at a minimum, impair the migration of the critically endangered North Atlantic right whale. It does not in our view comply with the requirements of the National Environmental Policy Act (NEPA), the Marine Mammal Protection Act (MMPA), the Endangered Species Act (ESA), and potentially the Coastal Zone Management Act (CZMA). It should be rescinded, and survey activity halted, until such compliance is confirmed, as explained below.

Technical Background, Underwater Noise, Marine Mammals, and the "Decibel". Underwater noise can adversely affect marine mammals, i.e., by causing physiological damage, hearing loss, and changes in behavior, which in turn can affect their ability to communicate, navigate, migrate, detect prey and predator, and reproduce.

The underwater noise energy reaching a marine mammal is measured in decibels(dB), often by the formula 10 times the logarithm of that energy. That means that a 10 dB increase in decibels, say from 130 to 140 dB does not represent an eight percent increase in the noise energy received, but rather a tenfold increase.

Events where noise levels exceed criteria i.e., "takes" are generally calculated as the product of the area around the noise source where criteria levels are exceeded, multiplied by the density of the mammals in that area, multiplied by the time the noise source is present. The area where noise levels are exceeded is called the ensonified area, and is often estimated by another logarithmic formula.

That formula often expresses the reduction in noise level from the noise source to the mammal in terms of a "transmission loss" factor times the logarithm of the

distance required for the noise to decrease to the criteria level. So, suppose that loss factor is 15 dB. Then, here again, an increase in the noise source level of 15 dB, from say 160 to 175 dB, doesn't change the distance required by nine percent but rather tenfold, i.e., it could require going from 100 to 1000 meters or from 1,000 to 10,000 meters.

Therefore, the area affected and the impact on marine mammals, or "takes", are extremely sensitive to those noise source levels and transmission loss factors, hence a focus on them in this document.

A. National Environmental Policy Act (NEPA) Compliance

1. Need for at least an Environmental Assessment.

The National Marine and Fisheries Service (NMFS) diminishes its NEPA obligations by suggesting that these survey actions warrant a categorical exclusion. Categorical exclusions are reserved for proposals where the environmental impacts are clearly insignificant. For example, the analysis in the NMFS Federal Register (FR) documents and the Atlantic Shores application, the one-hundred and fifty references cited for support, the optimistic and scientifically unsupported assumptions in the numerical calculations raised below, the numerous qualified assumptions and conclusions made by NMFS of what is likely and unlikely belie that conclusion.

For example, in the NMFS Atlantic Shores proposed IHA FR Notice, Volume 87, No 18, January 27, 2022, page 4201, those conclusions regarding the impact to the right whale on page 4224 use the words "are not expected to", "unlikely", and "does not anticipate". That does not meet the clearly insignificant test for a NEPA categorical exclusion.

In addition, as discussed in Section B.2 below, the NMFS has approved two surveys and is considering a third that would overlap both spatially and timewise. NEPA regulations and case law discourage the segmenting of actions that have similar impacts and that occur in the same place and time. Therefore, these actions should be combined into a single proposal, and at a minimum the cumulative impact of such actions needs to be disclosed and considered in decision making. This argues even further for at least the preparation of an environmental assessment.

The only thing that is clear from all the material is that it is unclear what the impacts of the proposed survey activity will be on marine mammals, and that warrants, at a minimum, the preparation of a NEPA environmental assessment.

In addition, as discussed just below, the large survey area proposed, versus all other viable areas, furthers the process of prejudicing the selection of future wind energy areas, which has far-reaching and clearly significant environmental effects. That is not a subject for a categorical exclusion NEPA level review.

2. Excessive and Prejudicial Geographical Survey Scope.

The proposed Atlantic Shores survey areas (Exhibit A) extend far beyond its lease area and the currently proposed cable corridors to shore (Exhibit B). It extends north of the lease area but not south. It covers areas closer to shore, but not farther out.

The proposed IHA NMFS FR notice (January 27,2022, page 4201) states that the purpose of the survey is to conduct high resolution geophysical (HRG) surveys in the lease area and along potential export cable routes (ECRs) to a landfall location in either New York and New Jersey. However, no such cable routes, potential or otherwise, have been identified in the Atlantic Shores proposal in most of the area shown for ECR South and North.

The FR notice then goes on to say that "the purpose of the proposed surveys is to support the site characterization, siting and engineering of offshore wind project facilities including wind turbine generators, offshore substations and submarine cables, within the lease area and along export cable routes (ECRs)".

We are not aware of any proposal to site additional turbines in the survey area beyond projects 1 and 2 in the Bureau of Ocean Energy Management (BOEM) Notice of Intent to prepare the environmental impact statement (EIS). If that is being federally planned, then it should have been stated clearly in the Notice of Intent, and should be part of the EIS proposed action itself. Since such elements are not included in those documents, survey activities not directly necessary for the proposed action in the lease area and the two proposed cable routes to landfall locations should not be conducted.

Exacerbating this problem further, the survey area is limited to within approximately twenty-three miles off shore and intersects part of the primary migration corridor of the North Atlantic right whale (Exhibit C). We have documented elsewhere the significant economic impact of close-in visible turbines on the shore economy, as well as the potential for blocking the migration of the whale from operational turbine noise permeating its primary migration corridor.

The Atlantic Shores website says the turbines will be located from 9 to 20 miles offshore in the lease area. But the survey area extends another 3 miles near there. As mentioned below the primary migration corridor of the North Atlantic right whale goes from about 20 to 32 miles offshore. So, unless the project is actually planning to put turbines in 3 miles of the migration corridor -which is a very bad idea-there is no need to survey out that far and the survey area should be restricted to 20 miles out for the lease area.

No farther out areas are identified for surveying which could avoid these problems. No larger areas south of the lease area are included for study. This amplifies the concerns raised in our recent lawsuit filed on January 10, 2022, Case 1:22-cv-00055, because it prejudices the selection of future wind energy areas where wind turbines will eventually be placed without proper NEPA review, including public input.

Rather those locations continue to be directed towards certain areas by others without public input. Our lawsuit contends that the selection of wind energy areas is the most environmentally important decision to be made, and it should be made by the responsible federal agency based on the public interest with public input. To do that it should be preceded and supported by a regional environmental impact statement (EIS) that considers all reasonable areas as alternatives and then selects the appropriate ones. Only then should survey activity proceed for the selected areas.

Therefore, survey activity that is not directly needed for the publicly proposed scope of the Atlantic Shores project should not be pursued. The geographic scope of the proposed survey area should be reduced accordingly. If it is not, it would also seem improper for a potential future bidder on lease areas to do this survey work and potentially gain a competitive advantage on such sales.

In its approval of the IHA, FR Notice Volume 87, No 78, April 22, 2022, page 24103, and response to the concern of the unexplained large geographical survey area by Clean Ocean Action (COA) and Save LBI, the NMFS states that it is outside its jurisdiction to determine the scope of a survey. But surely the NMFS would not place marine mammals at risk for frivolous purposes, and it must know the survey purpose to determine least practicable adverse impact. The NMFS should have and should now consult with the Bureau of Ocean Energy Management (BOEM) and provide a satisfactory answer to these questions in a correction Notice in the Federal Register.

Specifically, NMFS should require public disclosure by Atlantic Shores as to the intent of the survey and publish it in the FR. Is this advance planning for further turbine placement in the northern part of the lease area? Is future turbine siting envisioned along new cable routes that might be identified from the survey as the purpose language in the FR states?

B. Marine Mammal Protection Act (MMPA) Compliance

Background: The MMPA prohibits the "take'' of marine mammals, with certain exceptions. Sections 101(a)(5)(A) and (D) of the MMPA (16 U.S.C. 1361 et seq.) direct the Secretary of Commerce (as delegated to NMFS) to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if certain findings are made and either regulations are proposed or, if the taking is limited to harassment, a notice of a proposed incidental harassment authorization is provided to the public for review.

Authorization for incidental harassment takings shall be granted if NMFS finds that the taking will impact "small numbers" and have a negligible impact on the species or stock(s)……

"Take" is a term of art meaning, in brief, an action that captures, kills (serious injury, death), or has the potential to injure (level A) a marine mammal, or one that has the potential to disrupt its behavioral pattern (Level B). 16 U.S.C. § 1362(13), (18).

Specifically, "Level A" takings refer to "any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild" and,

"Level B harassment" refers to "any act of pursuit, torment, or announcement which has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering." 16 U.S.C. § 1362(18).

Where harassment and/or serious injury or death may occur, a rulemaking is required per CFR 216.105.

Deficiencies: The IHA's for these surveys are deficient in many respects.

1. The survey actions are segmented and do not consider the full, cumulative impact on a marine mammal population.

2. The source noise level for the highest noise level instrument used is low, and not consistent with other higher values found in the technical literature.

3.The noise propagation loss factor used is too high and optimistic, not consistent with current scientific norms or with the factor used by NMFS in other take authorizations, and significantly underestimates the level A and B takes.

4.The proximity of the North Atlantic right whale's primary and critical migration corridor to the survey area was not presented.

5. The potential for Level A takes from cumulative noise exposure over time has not been fully analyzed.

6. All the pathways from Level B exposure and/or masking of the whale's communications potentially leading to serious injury or death have not been identified and analyzed.

7. Criteria for determining "negligible impact" have not been defined.

8. The criteria for "small numbers" is not supported scientifically or consistent with a prior Court decision.

9. The 160 dB criteria for determining whale disturbance may be too high.

10. Therefore, the NMFS conclusions regarding "negligible impact" and "small numbers" are not supported.

11. A Rulemaking and Letters of Authorization are required for these surveys.

12. A robust Passive Acoustic Monitoring (PAM) System is required as one means of effecting the least practicable adverse impact.

13. Other measures and procedures are required to effect the least practicable adverse impact.

Deficiencies Explained

1. The survey actions are segmented and do not consider the full, cumulative impact on a marine mammal population.

There are now new major issues of lack of cumulative impact disclosure because NMFS is approving multiple surveys that overlap both spatially and time wise.

The NMFS previously authorized survey activities for the Ocean Wind project from May 10, 2021 to May 9, 2022 in an area that overlaps much of the Atlantic Shores survey area. Prior to that it had authorized survey activities for Atlantic Shores from April 20, 2021 to April 19, 2022. So, the two survey activities operated concurrently in much of the same geographical area for over 11 months. The Ocean Wind survey renewal would repeat that overlap between May 10, 2022 and April 18,2023(Exhibit C).

The NMFS is also now considering approval of a third IHA for a survey by Next Era Energy Transmission MidAtlantic Holdings LLC (NEETMA). That survey would overlap major parts of the two other survey areas and its Northern Survey Area would intersect the primary migration corridor of the right whale (see Exhibit D below and FR Notice, Volume 8, Number 89, May 9, 2022, page 27578, Figure 1). Although the start date is not specified, the 320 survey days to be approved will very likely overlap the other two surveys above timewise.

The cumulative impact of the three surveys is shown below in Table 1 for the distance controlling Dura Spark unit, and the NMFS published vessel travel per day and North Atlantic right whale density numbers, for both the 20 dB loss factor used by the NMFS and the more appropriate 15 dB noise loss factor-as explained in Section B.3 below.

Table 1, Cumulative Level B Takes

Survey	Survey Days	Vessel travel per day (km)	Radius to 160 dB (meters) 20 dB loss	Radius to 160 dB (meters) 15 dB loss	Level B Takes (20 dB) # of whale disturbances	Level B Takes (15 dB) # of whale disturbances

Atlantic Shores	360	55	141	736	17	95
Ocean Wind	275	70	141	736	9	47
Next ERA	318	62	141	736	8	45
Totals	953				34	187

,

Not considering these activities together is not only unscientific and not logical, but not consistent with the language in the marine Mammal Protection Act (MMPA). Sections 101(a)(5)(A) and (D) of the MMPA above speaks to allowing incidental take "upon request therefore by citizens (in the plural) of the United States who engage in a specified activity (other than commercial fishing) within a specified geographical region" (in the singular). It would seem then that both legally and logically survey activities conducted at the same time in the same geographical region should be considered as a single Incidental Take Authorization (ITA) or IHA review.

In its response to this comment the NMFS singles out the term "specified activity" and asserts that that must apply to the proposal from a single applicant. However, that is not consistent with the rest of the language in that paragraph. The paragraph speaks to citizens of the United States in the plural making such requests and operating in the same geographical region. If the Congress had meant it to apply to a single citizen action it would have said "citizen". A more consistent reading of the paragraph in whole would define specified activity as for example, high resolution geographical surveys, or pile driving or wind turbine operation.

Therefore, the language of the Act supports combining like activities where that is feasible timewise, and if not, at least including a section in each ITA or IHA review on the cumulative impact of all recent, current and reasonably foreseeable authorizations.

The MMPA also speaks to maintaining a modern scientific resource program and the use of the best available scientific information in several sections. In addition, the ESA requires that analyses be done based on the best science available. It is not scientifically credible to analyze impacts on a critically endangered whale in a piecemeal, segmented fashion. Likewise, the NEPA requires analysis of cumulative impact.

Therefore, at a minimum, all such future authorizations should include a section on the cumulative impact of the recent authorizations, those being considered concurrently and those that are reasonably foreseeable, so that the full impact on endangered mammals can be seen and considered in making decisions.

2. The source noise level for the highest noise level instrument used is low, and not consistent with other higher values found in the technical

literature.

For example, in the Atlantic Shores proposed IHA, a reference for the source noise level in Table 2 of a 203 dB root mean square (rms) source noise level to represent the Dura-Spark 240 unit is not specified. It appears to be based on another unit, the Dura-Spark UHD, which was found in the 2021 authorization. The footnote says that the level was based on the Sig-electric 820 unit with a power level of 750 joules. But the data in the graph in Appendix A of the Atlantic Shores application of power output versus energy shows an average level of 215 dB at 750 joules for that unit, and the manufacturer presents a typical source level of 226 dB. It is not clear whether those are rms levels. If they are not, those numbers still point towards rms values greater than 203 dB.

The 203 dB value is not consistent with the 214 dB rms value for sparker units in Table 1 of the June 29th ,2021, ESA Programmatic Consultation report that NMFS says it relied on for ESA compliance. It is not consistent with the 214 dB value specifically for the Applied Acoustic Dura-Spark unit presented in Table 5 of the February, 2021, BOEM Biological Assessment referenced in the ESA Programmatic Consultation. It seems odd for the NMFS to rely on a lower 203 dB value for MMPA compliance and a higher 214 dB value for ESA compliance.

The 203 dB level is not consistent with the Atlantic Shores IHA application dated December 23, 2019 which shows a higher rms level specifically for the Dura-Spark 240 unit of 211.4 dB in Table 2-2.

The 203 dB value is not consistent with the 213 dB rms value stated for the Applied Acoustics Dura-Spark 240 unit presented in Table 1 of the document titled "Takes of marine mammals incidental to specified activities; taking marine mammals incidental to marine site characterization surveys off of Delaware", April 4, 2018.

It is not consistent with two other references that show a higher rms level. The report titled, Characteristics of Sounds Emitted during High Resolution Marine Geophysical Surveys, BOEM OCS study 2016-044, Table 10, for 750 joules (per page 4204 of the FR notice the energy level based on Atlantic Shores previous experience with the unit) shows a rms source level of 211 dB for the Dura-Spark unit. That number is also found in the December 23, 2019 Jasco Applied Sciences Report on page 3.

As shown in the Tables 2 and 3 below, the difference in noise source level of 203 dB versus 211 dB has a very significant impact on the distances to meet criteria and the number of Level B takes. Absent a compelling justification for the 203 dB level, the 211 dB level is more prevalent in the technical literature and the preferable one to use.

The NMFS response to our comment does not support the use of a 203 dB noise source level for the Dura-Spark 240-unit. Rather the recommended 211 dB level should have been used.

The Atlantic Shores IHA application states only that the energy level of the Dura-spark 240 unit will not exceed 700 to 800 joules of energy input (page 5). If a source level was needed for 800 joules, Atlantic Shores and NMFS could have easily interpolated the specific noise measurement data for the Dura-spark 240 unit in the 2016 Crocker and Frantantonio Report, which they both reference as a reliable source.

That report in Table 10 shows a 209 dB root mean square (rms) noise level at 500 joules and 213 dB at 1000 joules for the Dura-spark 240 unit.. So, an interpellation between those for 800 joules results in a noise source level of 211.4 dB, which is likely why that number appears in other technical literature for the Dura-spark 240 unit.

Instead, Atlantic Shores and NMFS turns to a quite different unit, the SIG ELC 820 sparker, for a noise source level number. That device is notably lighter and less powerful than the Dura-spark 240 unit. It weighs only 1.8 kilograms or 4 pounds (page 46, Crocker & Frantantonio) compared to 60 kilograms or 132 pounds for the Dura-spark 240 unit (page A-14). It's emitted pressure wave form has a peak pressure for 500 joules at 5 meters of about 30,000 pascals (Figure 35) compared to 100,000 pascals for the Dura-spark 240 unit (Figure 37). For the energy range of interest here, 500 to 800 joules, a comparison of Tables 9 and 10 of the Crocker Report shows that it has a rms noise level 8 dB lower than the Dura-spark 240 unit.

In addition, the statement that operation at 500 to 600 joules is more likely isn't particularly relevant because the Atlantic Shores application only restricts the power level to below 800 joules, which is what NMFS has approved. However. even if operation was restricted to 500 joules, Table 10 of the Crocker and Frantantonio report shows a rms noise source level of 209 dB for the Dura-spark unit for that power level, which in itself is substantially greater than 203 dB.

Therefore the use of the ELC 820 unit underestimates the noise source level and its use as a surrogate unit is not justified. The noise source level of 211 dB level that was recommended in our comments on the proposed Atlantic Shores IHA should have been employed here. The fact that the same substitution of the ELC 820 unit was used in the Mayflower Wind application for a different unit, the Geomarine Geo -spark 800 joule system, does not add any further justification for that practice here.

3. The noise propagation loss factor is too high, not consistent with current scientific norms or with the factor used by NMFS in other take authorizations, and significantly underestimates the distances to meet criteria and level A and B takes.

The use of a 20 decibel (dB) noise propagation loss factor for all the equipment noise source levels is not appropriate. According to a number of scientific sources,

the use of a noise propagation loss coefficient of 20 dB per tenfold increase in distance represents "spherical spreading" and is only appropriate in the "near field" where the calculated horizontal distance to meet criteria is comparable with the water depth.

The 20 dB loss factor in the equation 20 log r, where r is the horizontal distance from the source to the receiver, is only appropriate when the sound waves can spread out as a spherical shape. Further away from the source when the waves are constrained by the sea bottom and surface the waves spread out in a cylindrical way. That is often represented by a 10 dB loss factor and the equation 10 Log r. The practical spreading 15 dB loss factor and formula 15 Log r is used to bridge and represent both of these regimes.

The key question then is how far from the source can spherical spreading be assumed. It would seem logical for a source near the surface-as these are- that spherical spreading would end once the sound wave hits the bottom or at a horizontal distance equal to the water depth. For the survey areas here, that is less than 15 meters (See Exhibit B). For expected horizontal distances greater than 15 meters, the use of the "practical spreading" 15 dB loss factor would be appropriate.

This is explained more fully by Tetra Tech Inc. in their Acoustic Modeling Report prepared for Dominion Wind Energy of December, 2013. There they use the 20 dB loss factor only out to a distance equal to the water depth. At 8 times the water depth the formula transitions to the cylindrical equation 10 Log r. In between one water depth and 8 times the water depth the practical spreading formula 15 Log r is used.

In its response to LBI comments on the Ocean Wind and Atlantic Shores surveys, the NMFS points to the 1995 book by Richardson et al. to support the use of the 20 dB factor. That reference does present the 20 dB level for spherical spreading, but NMFS neglected to mention that description also includes the transition to cylindrical spreading with the 10 dB loss factor, which is assumed to occur at 100 meters (m). That is consistent with the 8 times water depth criteria used by Tetra Tech above, which for a 15 m depth will result in transition to cylindrical spreading at 120 m.

Put differently, the NMFS use of the 20 dB loss factor would only be appropriate out to a distance of 15 m which is much less than 141 m it predicts to meet criteria for the Dura Spark unit even using the optimistic 20 dB loss factor. Using the 15 dB loss factor the distance to meet 160 dB behavior disruption criteria would be 736 m and 15 m would represent an insignificant portion of that path. Therefore, the NMFS is using a factor that is just not appropriate for the noise source levels, shallow depths, and distances required here to meet the 160 dB criteria.

In its response to comments on the Ocean Wind and Atlantic Shores surveys (FR Notice, Vol. 87, No. 93, May 13, 2022) the NMFS states that the wave length of the sound emitted relative to the water depth should be considered in determining

these transitions. It states that for sounds in the thousands of hertz (cycle per second) range, the wave length is short and spherical spreading could extend further. That is correct if the relevant wave length (sound speed /frequency) is much smaller than the water depth.

But here with respect to the right whale, we are interested in frequencies less than 2000 hertz (Hz) which are thought to be its primary hearing range, assuming that is the same as its dominant frequency calling range of 20 to 2000 Hz (See Parks, SE, Clark CW. 2007. Acoustic communication: Social sounds and the potential impacts of noise. In: Kraus SD, Rolland R, editors. The Urban Whale: North Atlantic Right Whales at the Crossroads. Cambridge, Massachusetts: Harvard University Press. p. 310-332).

Further, based on analysis of vocalizations the right whale's estimated band of maximum hearing sensitivity is 100 to 400 Hz (See Short- and long-term changes in right whale calling behavior: The potential effects of noise on acoustic communication. The Journal of the Acoustical Society of America 122, 3725 (2007), Susan E. Parks and C. W. Clark.

For the highest frequency in that range (shortest wave length) the wave length would be about 1700 meters per second (sound speed in water) divided by 400 cycles per second or 4.25 meters, which is not small relative to water depths less than 15 meters. Therefore, wavelength is not a major factor here as regards the right whale and the use of the appropriate 15 dB noise loss factor.

The 20 dB factor is presented without explanation in equations in various reports provided to Atlantic Shores, e.g., in Distances to Acoustic Thresholds corresponding to Level B Harassment for High Resolution Geophysical Sources, December 23, 2019, Jasco Applied Sciences, Document 01875.

The use of the 20 dB factor is not consistent with the NMFS approach used and described well as "common practice" in the NMFS's own ITA by rulemaking of December 15, 2021 titled, "Takes of Marine Mammals Incidental to Specified Activities; Taking Marine Mammals Incidental to U.S. Navy Construction at Naval Station Newport in Newport, Rhode Island", which explains,

"SOUND PROPAGATION. Transmission loss (TL) is the decrease in acoustic intensity as an acoustic pressure wave propagates out from a source. TL parameters vary with frequency, temperature, sea conditions, current, source and receiver depth, water depth, water chemistry, and bottom composition and topography. The general formula for underwater TL is:

$TL = B * \log_{10} (R_1 / R_2)$,

Where

B = transmission loss coefficient (assumed to be 15)

R_1 = the distance of the modeled SPL from the driven pile, and

R_2 = the distance from the driven pile of the initial measurement.

This formula neglects loss due to scattering and absorption, which is assumed to be zero here. The degree to which underwater sound propagates away from a sound source is dependent on a variety of factors, most notably the water bathymetry and presence or absence of reflective or absorptive conditions, including in-water structures and sediments. Spherical spreading occurs in a perfectly unobstructed (free-field) environment not limited by depth or water surface, resulting in a 6 dB reduction in sound level for each doubling of distance from the source (20*log(range)).

Cylindrical spreading occurs in an environment in which sound propagation is bounded by the water surface and sea bottom, resulting in a reduction of 3 dB in sound level for each doubling of distance from the source (10*log(range)).

As is common practice in coastal waters, here we assume practical spreading (4.5 dB reduction in sound level for each doubling of distance). Practical spreading is a compromise that is often used under conditions where water depth increases as the receiver moves away from the shoreline, resulting in an expected propagation environment that would lie between spherical and cylindrical spreading loss conditions. Practical spreading was used to determine sound propagation for this project". Emphasis added, also a 4.5 dB doubling distance is equivalent to using a 15 dB loss factor, "B", and in the equation above and R_1 is one meter.

The use here of a 20 dB factor is not consistent with the 15 dB loss factor presented above that was used by NMFS in approving a request from its parent agency, the National Oceanic and Atmospheric Administration (NOAA), for authorization to take marine mammals incidental to the NOAA port facility project in Ketchikan, Alaska as recently as December 1, 2021.

Regarding the Navy construction at Newport, Rhode Island and the NOAA construction in Ketchikan, Alaska, the NMFS says in its response to our comments on the Ocean Wind and Atlantic Shores surveys that these activities are not relevant to the noise surveys at hand because they occur in less than 10 m The depths here are about twice that but that should not significantly change the decibel level acoustics.

The NMFS also states that the pile driving activity associated with those projects produces sound with higher frequency and longer wavelengths than the noise sources being employed here-making them more amenable to the 15 dB factor. While pile driving activities do produce some noise energy at higher frequencies about 75 percent of the noise spectrum is still below the two-thousand Hz frequency level which is of interest here. That is shown in a report done by Jasco

Applied Sciences of July 21, 2017 titled Acoustic Modeling Study of Underwater Sound Levels from marine pile driving in southeast Alaska, which contains results specifically for the Ketchikan facility (See Figures 1 through 5 on page 12 and Figure 10 on page 17). Therefore, that approval is relevant to the noise surveys here.

The 30-inch diameter piles modeled in that study (Table 1) are also similar to those used in the Naval construction action in Newport, Rhode Island (See Table 2 of the Federal Register notice of October 13, 2021 titled Take of Marine Mammals Incidental to Specified Activities; taking marine mammals incidental to U.S. Navy construction at Naval Station Newport in Newport Rhode Island). Therefore, that approval is relevant to the noise surveys here.

The use of the 20 dB factor is not consistent with the 15 dB factor used very recently on February 8, 2022 by the NMFS to justify the "Taking of Marine Mammals Incidental to Kitty Hawk Wind Marine Site Characterization Surveys, North Carolina and Virginia" which used similar sound survey devices.

The use of a 20 dB factor is not consistent with the Bureau of Ocean Energy Management's (BOEM's) cited factor of 15 dB for use in the Practical Spreading Loss Model for pile driving in its report titled, A Parametric Analysis and Sensitivity Study of the Acoustic Propagation for Renewable Energy, OCS study, BOEM 2020-011,

It is not consistent with NMFS's own previous recommendation in 2012 cited in that Report on page 30 for use of a 15 dB factor. In fact, that same report shows that the use of the 10 Log r formula, i.e., even less transmission loss than the 15 dB factor, compared better with real or simulated measurements (See Figure 3.2 on page 31). So even the practical spreading loss formula may overestimate transmission loss, and certainly the 20 log r formula does.

The use of a 20 dB loss factor is not consistent with the method used by Tetra Tech Inc. for the Dominion Wind Energy Project as discussed in the report titled, Underwater Acoustic Modeling Report Virginia Offshore Wind Technology Advancement project, December 2013. In that report, Tetra Tech only uses the 20 dB factor out to the water depth distance. Tetra Tech then uses the lesser 15 dB factor from there to eight times the water depth, and beyond that uses a 10 dB factor.

The use of the 20 dB factor is very far from the more conservative "worst case" formulas used by an Atlantic Shores noise specialist consultant, Pangea Subsea (Report 04563-1) in the Atlantic Shores application for incidental harassment authorization of December 15, 2021. Formulas 7 and 8 of that report only use a 20 dB loss factor from 1 m to 3.5 m, and a 10 dB coefficient beyond that. Using those formulas, the distance to reach the 160 dB level for the Dura-Spark 240 unit would be 5,677 m instead of the 141 m being used by NMFS, even using the lower noise source level of 203 dB.

The 20 dB factor is far from the effective transmission loss factor of 16 dB that reflects the distance to criteria results in the BOEM's own Atlantic Geological and Geophysical Activities Programmatic Environmental Impact (EIS) statement of March 2014. Using the above formula for transmission loss, that "effective" 16 dB value can be calculated from the radial distances (about 1750 meters) required to reach 160 dB in Table D-23 of the EIS for the four shallow depth scenarios 20, 26,30 and 34, and the representative source noise level of 212 dB for boomers (modeled as similar to sparkers) and sparkers, in Tables D-6 and D -13 respectively.

The use of the 20 dB factor is not consistent with field measurements. A comparison of modeled transmission loss with actual measurements by Thompson et al. in the report titled, Effects of Offshore Wind Farm Noise on Marine Mammals and Fish, dated July 6, 2006, found that for pile driving events with frequencies less than 1000 hertz, the 15 dB loss factor was the best approximation of transmission loss for shallow North Sea and Baltic waters, and other settings comparable to this survey area, pages 15-16.

A number of other studies use the 15 dB factor such as the recent analysis by Stober et al. estimating larger turbine noise source levels titled, How Could Operational Underwater Sound from Future Offshore Wind Turbines Affect Marine Life, March 15, 2021, and the recent study on passive acoustic monitoring (PAM) detection probabilities titled, Pam Guard Quality Assurance Module for Marine Mammal Detection using Passive Acoustic Monitoring, CSA Ocean sciences Inc., August, 2020.

Impact of Proper Propagation Loss Factors and Source Levels. The dramatic effect on the distances required to meet criteria and on the number of animal takes using the 15 dB factor versus the 20 dB factor, and the 211 dB source level versus 203 dB are shown in Tables 2 an3 respectively.

- Using NMFS's vessel speed, survey days, and animal densities in its Atlantic Shores FR Notices, with the stated lower noise source level of 203 dB for the Dura-Spark 240 unit, the use of the more appropriate 1**5 dB loss factor versus the 20 dB** would increase the **distance to meet the 160 dB criteria from 141 m to 736 m** (Table 2). The now larger Zone of Influence (ZOI) would increase the **annual Level B takes from 17 to 95** (Table 3 below).

- With the 15 dB loss factor, the use of the **211 dB source level versus the 203** dB level increases the distance required to meet the 160 dB criteria from 736 m to 2,512 m (Table 2) and the number of **level B takes from 95 to 340** (Table 3).

- The use of the 211 dB source level versus 203 dB **and** the 15 dB loss factor versus 20 dB would dramatically increase the **distance** to meet 160 dB **from**

141 m to 2,512 m (Table 2), and the number of **Level B takes from 17 to 340 per year** (Table 3).

***Table 2, Sensitivity of Radial Criteria Distance to Source Noise Level and Propagation Loss Factor*-Atlantic Shores Survey**

		Decibels (rms)		Distance to Criteria (meters)			
Equipment	Criteria	Sound Exposure Level (SEL)	Sound pressure Level (SPL)	20 dB Loss factor	15 dB Loss factor	Tetra Tech	Pangea Subsea
Dura-Spark 240	Level B, 160 dB		203	141	736	354	5,677
Dura-Spark 240	Level B, 160 dB		211(3)	355	2,512	2,234	35,980
Edge-tech 2000-DSS	Level B, 160 dB		195	56	215	80	900
Dura-Spark 240	Level A, PTS,1hour Imp.,183 dB	215.5(1)	203	42	147	54	510
SBI	Level A, PTS,1hour non-imp., 199 dB	177(2)	190				58

(1) See Jasco Applied Sciences Report, in the Atlantic Shores incidental take application for 2021, titled Distances to Acoustic Thresholds corresponding to Level A Injury for High Resolution Geophysical Sources, November 4, 2019, Document 001880, Version 2.0, and the calculation below in Section B.5 for a one hour exposure.

(2) Atlantic Shores Incidental Harassment Authorization application, December 2021, Appendix C.

(3) From Characteristics of Sounds Emitted During High Resolution Marine Geophysical Surveys, BOEM OCS Study 2016 -044, Table 10, for 750 Joules (per page 4204 of the FR notice based on Atlantic Shores previous experience with the unit), and the Jasco Applied Sciences Report titled Distances to Acoustic Thresholds Corresponding to Level B Injury for High Resolution Geophysical Sources, December 23, 2019 Report, Document 01875, page 3.

Table 3. Estimated Takes-Atlantic Shores Survey

Take Level	Criteria (dB)	Source Level, rms (dB)	Propagation Loss factor (dB)	Distance to Criteria (meters)	ZOI (km^2 per day)	Estimated Takes per year
A	183 dB, one hour, cumulative	215.5 (1)	15	147	16.2	19

B	160	203	20	141	15.6	17
B	160	203	15	736	82.7	95
B	160	211	15	2,512	296	340

(1) See calculation in Section B.5

The Table results confirm that for Level B takes, the Dura-Spark 240 unit is the controlling one, but also that a one-hour Level A cumulative exposure scenario is one to be examined, and we recommend that NMFS do such an analysis.

The use of the scientifically supported 15 dB factor alone, even with the 203 dB source level calls into question the NMFS conclusions regarding adequate exclusion zones and negligible impact, even more so with the 211 dB source level.

As cautioned in the Introduction above, these two factors have a very significant effect on the area exposed to above criteria noise levels, and the number of animal takes, and must have a sound, defensible, technical and scientific support. That is not present here, as shown by the numerous inconsistencies cited.

In fact, without any plausible scientific explanation, it seems almost arbitrary on NMFS's part to approve the use of the 15 dB factor for its parent agency NOAA, the Navy, and other wind energy companies doing similar survey work, but bless the use of the 20 dB factor here. It surely is aware of the dramatic effect that factor has on reducing ensonified zones and the number of animal takes.

The NMFS should go back and revise its calculations using: (a) the scientifically mainstream 15 dB factor that it has used in other recent take authorizations, including a recent one for its parent organization, NOAA, and (b) the 211 dB source level for the Dura-Spark unit that is more prevalent in the technical literature.

4. The proximity of the North Atlantic right whale's primary migration corridor to the survey area was not presented.

In several places, the FR Notices attempt to minimize the correlation of the primary right whale's migration corridor with the survey areas. In fact, the two are strongly intertwined.

The Atlantic Shores survey area goes out about 23 miles. The dominant migration corridor for the right whale on an annual basis extends from approximately 20 to 32 miles offshore as shown in Exhibit D. Therefore, much of the survey area is near or adjacent to that corridor and part of the survey area even intersect with it. This has implications for impairing the migration of the whale from survey noise, which is of course could jeopardize its continued existence, as discussed further in Section B.6.

Considering this, the statement on FR page 4205 in the Atlantic Shores proposal extending the right whale's migration area beyond the continental shelf and then comparing that huge area to the survey area is misleading.

While there may be some sparse right whale movement farther out in May and June, most of the migration is concentrated closer in, near to, and even intersecting

with the survey area in January, February, March, April, and November. See Habitat-based cetacean density models fort the U.S. Atlantic and Gulf of Mexico (2015 version), Duke University, Explore Sea Map Observations.

The concentration of the right whale's migration near and within the survey area is shown in Exhibit D here on an annual basis and in Exhibit E for the month of March. The presence of their primary migratory path is further confirmed by Figure 9 of Atlantic Shores Offshore Wind own application for an MMPA ITA rulemaking shown in Exhibit G. The density map there for winter shows that the migration corridor intersects the project area and extends about 12 miles southeast of it. The density map for spring shows an even narrower migration corridor adjacent to the project area of about 5 miles.

The NMFS large area comparison is therefore a misleading representation of the actual correlation between the migration and the proposed survey activities. It should not be used, especially in the section purporting to justify a "negligible impact" to the whale.

Rather, that correlation is essential to understanding the impact of the survey on the right whale, and in estimating Level A and B takes and the impact of masking its communication. The NMFS should have provided that density data in map format by month at the outset of this analysis to facilitate that understanding, and it should delete and not rely on the misleading large continental shelf area comparison.

The use of averaged density numbers in the highest season is a step in the right direction towards getting conservative take estimates. However, it would be better to use the whale's calendar instead of ours, and pick the three highest months of its migration in the area.

It is also unclear how the density data was used spatially in each area before a density number was averaged by season. It appears that some sort of average density was used for each area. However, right whale densities within an area can vary by an order of magnitude, and using an average may not be conservative. Since the proposal does not specify where the survey vessels will be, when, it is necessary to account for the worst case (with respect to right whale exposure to noise) where the vessels are in the worst places at the worst migration times.

The NMFS should present more data by month on the density numbers used so they can be compared to the Robert's data. It needs to explain how the density numbers were selected within each survey area before they were averaged over time. This requires further presentation and analysis to show overall whether and how conservative the density selection method is.

5. The potential for Level A takes from cumulative noise exposure has not been fully analyzed.

Regarding the permanent threshold hearing shift (PTS) discussion, the NMFS cannot simply assume that an animal approaching a high noise area will turn away and quickly leave that area. To get there it may have already been subjected to behavioral disruption levels (see Section B.9), may be disoriented, stressed, and even experiencing temporary threshold hearing loss.

It is also important to keep in mind that, initially and perhaps for some time, the whale does not know where the noise source is. While it appears that baleen whales have some ability to localize sounds at frequencies of a few hundred hertz, it's not clear that that is the soul driver of how they move (see W. John Richardson, Marine Mammals and Noise, 1995, Section 8.6). In any case it may take them a while to figure it out, and initially they might even move toward the noise source. A whale might also tolerate some noise to stay on its migration course. Such an animal remaining in a high noise area for only an hour could receive a cumulative sound exposure exceeding the PTS hearing loss criteria for impulsive sources of **183 dB.**

One of Atlantic Shore's noise consultants, Pangea-subsea, apparently thought enough of the likelihood of a significant cumulative exposure to perform a detailed numerical analysis of a one-hour exposure to its Sub-Bottom Imager (SBI) in Appendix C of the Atlantic Shores application. A similar analysis was done here for the Dura-Spark 240 unit.

The cumulative source sound energy level (CSEL) for an hour exposure to the Dura-Spark 240 unit was calculated at:

CSEL = SEL (184 dB*) + 10 $\log_{10}$ (0.4 sweeps per sec* x 3600 sec) = 215.5 dB,

Where SEL = the source energy level.

*Jasco Applied Sciences Report, in the Atlantic Shores incidental take application for 2021, titled Distances to Acoustic Thresholds corresponding to Level A Injury for High Resolution Geophysical Sources, November 4, 2019, Document 001880, Version 2.0.

The result in Table 2 above shows that for a one-hour exposure using the more realistic propagation loss factor of 15 dB a buffer distance of 147 meters is required to avoid exceeding the **183 dB criteria**. That is comparable to the 141 m distance that NMFS (optimistically) identified for Level B takes and caused it to create an exclusion zone, so it should not be dismissed here for the even more serious Level A takes.

Using the NMFS formula on page 4215 of the Atlantic Shores FR Notice, the 147 m gives a Zone of Influence (ZOI) of 16.24 km^2 per day. Using the FR vessel data, animal densities and the formulas on pages 4215, that larger ZOI would result in an estimated Level A take from Permanent Threshold Shift (PTS) alone of 19, as shown in Table 3. That is clearly a significant number considering the right whale's precarious status, and does not account for potential serious injury or fatality from the other pathways described in Section B.6 below.

In its response to Save LBI's comment to further consider level A takes, the NMFS says that the wrong threshold criteria was used in our analysis. However, that is not the case. Save LBI used the appropriate 183 dB cumulative sound energy level criteria of 183 dB as shown in Tables 2 and 3 and the discussion in Section B.5. So, the example given of a one-hour exposure to the Dura spark unit remains sound. The discussion in Section B.6 on masking regarding relative vessel and whale travel speeds also shows that a one-hour exposure is indeed plausible.

Additionally, the NMFS assurance that Atlantic Shores is required to not approach any right whale within 500 m or operate the sparker unit within 500 m of a whale does not inspire confidence. The NMFS is allowing Atlantic Shores-and others- to rely solely on visual detection of the whales, even at night. It is not requiring passive acoustic monitoring to augment that. Given that sole visual reliance, the time the whale spends underwater, the times of poor visibility including night time, and the limits on human attention span and eyesight, the likelihood of detecting a whale at 500 m and beyond is quite low.

Therefore, the NMFS cannot so easily dismiss the cumulative exposure PTS scenario and should do a more thorough, quantitative analysis of it.

6. All the pathways from Level B exposure and/or masking of communication potentially leading to serious injury or death have not been identified and analyzed.

The NMFS traditionally does two analyses in reviewing ITA or IHA requests, for level A and Level B takes. A third, comparable level analyses, is needed.

A level A harassment analysis calls for an assessment of the potential to injure a marine mammal or a marine mammal stock in the wild.

A level B analysis calls for an assessment of the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including but not limited to migration, breathing, nursing, feeding, or sheltering.

Assessments where harassment and/or serious injury or death may occur require a rulemaking per CFR 216.105.

The two MMFS analyses try hard to separate Level A injury from Level B harassment. But in the real, whale world that distinction is not so clear, and lesser exposures can indirectly lead to worser outcomes. That linkage is also present in the December 21, 2016, NMFS interim guidance, defining the term "harass," under the Endangered Species Act (ESA), as to "create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering."

The NEPA also demands a full analysis of these reasonably foreseeable real-world paths, particularly in the case of the North Atlantic right whale where serious injury

or death to only animal can spell extinction for the species as discussed below in Section B.8.

Therefore, the NMFS should assess this third path or missing linkage from reactions to level B harassment exposures and from masking of the whale's sound detection and communication abilities, to the "likelihood of injury" with a level of analyses comparable to that given to Level A and Level B takes.

Such paths include reactions to noise stimuli causing right whales to ascend and swim just below the surface where they are more vulnerable to vessel strike, not just from survey vessels, but from other vessels as well. This behavior has in fact been demonstrated experimentally by Nowacek et al. in the paper titled, North Atlantic right Whales ignore ships but respond to alerting stimuli, The Royal Society, may 20, 2003.

Another path to injury involves separation of calves from mothers as a result of masking of their communication from elevated noise levels. Such communications can employ low-amplitude signals susceptible to masking as discussed in the report, Acoustic crypsis in communication by North Atlantic right whale mother–calf pairs on the calving grounds, Susan E. Parks, Dana A. Cusano[†], Sofie M. Van Parijs and Douglas P. Nowacek, Published:09 October 2019.

The potential for such loss of mother/calf communication was also presented in, Acoustic propagation modeling indicates vocal compensation in noise improves communication range for North Atlantic right whales, Jennifer B. Tennessen, Susan E. Parks, June 15, 2016. Using the 150 dB source level in that study for a whale upcall, and the 15 dB loss factor, mother/calf communications could be blocked out to a distance of 2.1 to 7.2 miles from the Dura-Spark source noise levels of 203 and 211 dB respectively.

Still another path occurs from the potential disruption of the whale's migration since the primary migration corridor for the right whale is concentrated near and even intersects part of the survey area. That could occur from reactions to above Level B exposures and/or masking of the whale's sound capabilities.

Using either the 203 or the 211 dB noise source levels and the 15 dB propagation loss factor discussed above, a large number of level B takes, i.e., exposures above 160 dB, is predicted in Table 3. The potential for injury and to impair migration from reactions to those Level B behavioral disruptions needs to be fully analyzed.

Reactions to above Level B exposures could involve stress and distress. An animal's perception of a threat may be sufficient to trigger stress responses consisting of some combination of behavioral responses, autonomic nervous system responses, neuroendocrine responses, or immune responses.

Autonomic nervous system responses to stress typically involve changes in heart rate, blood pressure, and gastrointestinal activity, have a relatively short duration and may or may not have a significant long-term effect on an animal's fitness.

Neuroendocrine stress responses have been implicated in failed reproduction, altered metabolism, reduced immune competence, and behavioral disturbance. During a stress reaction, if an animal does not have sufficient energy reserves to satisfy the energetic costs of a stress response, energy resources must be diverted from other normal functions, leading to distress situation. This state of distress will last until the animal replenishes its energetic reserves sufficient to restore normal function. Studies in the Bay of Fundy found that noise reduction from reduced ship traffic was associated with decreased stress in North Atlantic right whales leading to a reasonable expectation that some of its normal functions, including its migration, could be impaired from higher level exposures.

The need to assess the impact on its migration from the **masking of the whale's communication** is equally important. The whales use sound to navigate along their migration. It also appears that their migration is aided by their capability to communicate with each other along the way.

The right whale's vocalizations are normally at the 125 dB rms level for low background noise, but can rise to 150 dB in the presence of high background noise (Parks et.al., The Royal Society, Individual right whales call louder in environmental noise, July 7, 2010). Using even the high 150 dB communication level, with the lower 203 dB noise source level for the Dura-Spark unit, and the 15 dB propagation loss factor above, masking of their communication would extend about 2 miles from the survey vessel. Using the 211 dB source number, masking would extend about 7 miles from the vessel.

The survey area extends about 3 miles into they primary 20 to 32-mile offshore migration corridor. So, when the vessel operates at the outer part, the whale's communications would be masked in about 33 to 83 percent of its corridor depending on the noise source level for the Dura-Spark unit. Vocalizations lower than 150 dB would be masked at greater distances, potentially throughout the entire corridor.

Because the whale vocalizations are less than the 160 dB behavioral disruption criteria, the masking of their sound capabilities extends further into their migration corridor, and the impacts of that masking on the obstruction or delay of their migration needs to be carefully considered, as it has direct implications on their survival as a species.

In its response to comments about masking the NMFS points to masking as only a chronic problem. It dismisses it here because the vessel is moving and that its analysis indicates because of the relative movement of whales in vessels that the masking should not be of long duration.

This might be a plausible explanation for the low 141 m radius derived using the 20 dB factor. However, for the more realistic 736 m distance to the 160 dB criteria with the practical noise spreading 15 dB factor, a simple geometric calculation of a vessel traveling 2.4 km per hour (55 km per day) encountering a stationary whale indicates that the masking time could be over half an hour. In addition, the whales encountered here are migrating and likely to be moving. The mean travel speed for mother calf pairs and groups is about half the vessel speed here (see Swim Speed, Behavior, and Movement of North Atlantic Right Whales (Eubalaena glacialis) in Coastal Waters of Northeastern Florida, USA James H. W. Hain, [1,] Joy D. Hampp, [2] Sheila A. McKenney, [2] Julie A. Albert, [3] and Robert D. Kenney [)]) so that the masking time would be doubled to over an hour.*

That is more than enough time for a mother to lose communication with and be separated from a calf, for a feeding opportunity to be lost, or for a migration to be interrupted. The NMFS should disclose its analysis and examine the masking problem further.

A recent in-depth review of behavior response studies titled, A systematic review on the behavioural responses of wild marine mammals to noise: The disparity between science and policy, November, 2016, identified a number of studies specifically associated with whale traveling, migrating, and directional swimming. NMFS should review those studies for applicability here and present the results. The burden of technical support here on NMFS is the same as discussed in Section B.5 for direct serious injury or fatality, it must show with high confidence that not a single whale is prevented from completing its essential migration.

In the Negligible Impact Analysis and Determination section, the NMFS seems to acknowledge the linkage between level B takes and an impact determination. It says that NMFS considers other factors such as the likely nature of any responses and the context of any responses, including migration. But then in that discussion it only qualitatively addresses effects on foraging and mating and calving. That is not sufficient to address what could in fact be the most dominant impacts.

Before it can reach a reasoned conclusion regarding negligible impact to the right whale, the NMFS needs to do an in-depth analysis of all the potential paths to serious injury or death, both directly and from impairment of its migration as a whole, from cumulative sound exposure leading to PTS, from the adverse reactions from behavioral disruption identified above and perhaps others, and from the masking of its sound capabilities.

7. Criteria for determining "negligible impact" have not been defined.

Before proceeding to a discussion of and conclusion regarding negligible impact the NMFS needs to define what that is. That requires two criteria, one for serious injury and fatality and one to define "small numbers" of takes. The latter was intended by the Congress in the MMPA to be a separate criterion, and that was reinforced by the Court decision in Natural Resources Defense Council, et al., Plaintiffs, v. Donald L. Evans, et al., Defendants, of October 31,2002 which found that "the legislative history demonstrates that Congress intended that "small numbers" and "negligible impact" serve as two separate standards".

The numbers of North Atlantic right whales are already very low at 350 animals and in steep decline (see Exhibit F). There are less than 94 females of reproductive age left. The NMFS 2020 stock assessment report for the North Atlantic right whale in Figure 4 shows an average per female productivity rate of 0.06 for the years 2013 to 2017. It also shows in Figure 2a an average female population of 180, leading to 11 average births per year. Table 2 of that report shows estimated human-caused fatalities at an average of 18.6 per year for that period.

According to the International Fund for Animal Welfare in its report titled, Critically Endangered North Atlantic right whales Show Dramatic Decline and are at Risk of Extinction, November 26, 2020, over the past five years from 2016 through 2020, 17 whales died on average per year from human actions. During that same period 7 whales were born on average per year.

With a human caused death rate (not including natural mortality) about twice the birth rate and a net loss of 8 to 10 whales per year, current mitigating and recovery measures are clearly not sufficient to protect the whale, and any additional serious injury or fatality would constitute a non-negligible impact.

Supporting that, in District 4 Lodge of the International Association of Machinists v. Janet Coit, NMFS, Case No. 21-1874, the following statement appears "In 2019, the Agency (NMFS) estimated there were no more than 368 right whales left in the ocean, and the Agency has determined that no more than eight right whales, on average, can be "taken" every ten years if they are to reach their optimum sustainable population. In other words, even one additional death a year increases the odds that the right whale will go extinct".

Table 3 in the NMFS proposed IHA FR notice gives a number of 0.7 for the potential biological removal of the North Atlantic right whale. That is defined as the maximum number of animals not including natural mortalities that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimal sustainable population size.

Therefore, the only sensible and scientifically credible criterion for the NMFS to adopt for the right whale is one of no instance of fatality or serious injury from survey noise. Therefore, the NMFS must demonstrate with very high statistical confidence, that not a single serious injury or fatality to the right whale will occur from either direct noise impact, or from indirect effects from behavior disturbance

or communication masking. For level B takes alone, that would mean higher than 99 percent confidence (94/95 takes) using the 15 dB loss factor and even the lower source noise level for the Dura-Spark unit. That level of confidence is not achieved as discussed below in Section B.10.

8. The NMFS criteria for "small numbers" is not supported scientifically or consistent with a prior Court decision.

Regarding small numbers, the FR proposed IHA Notice states on page 4225 that when the predicted number of individuals to be taken is less than one-third of the species or stock abundance, the take is considered to be "small numbers". This seems extraordinarily high particularly for a critically endangered whale, and we can find no support for it in the scientific literature.

That one-third number is inconsistent with the NRDC vs. Evans decision, where the Court found that "a definition of "small number" that permits the potential taking of as much as twelve percent of the population of a species is plainly against Congress's intent".

A reasoned presentation of impact ratings based on severity and likelihood of occurrence by Wood, Southall, and Tollit can be found in Appendix H of the Pacific Gas and Electric report titled, Central Coastal California Seismic Imaging project, May 14, 2012. That analysis leads to, in Tables 3.3 and 3.4, a high severity rating for Level B takes greater than 2.5 percent of an ESA-listed regional minimum population. Combined with either a high or medium likelihood of occurrence in Table 3.5 that results in an overall high impact rating.

The final environmental assessment of a Marine Geophysical Survey (MATRIX) by the US Geological Survey in the Northwestern Atlantic Ocean, August, 2018, suggests on page 65 that for rare species, that one percent of the population size should be considered as a take limit.

The allowed level B take percentage of 33.3 percent is also not consistent mathematically with the criteria of less than one serious injury, fatality criterion. As discussed in Section B.6, it is plausible that reactions and circumstances following a level B take could lead to instances of serious injury or fatality. Therefore, the two criteria are not mathematically independent and one needs to be consistent with the other.

Allowing 33 percent of the right whale population, or 121 Level B takes would mean that NMFS would have to demonstrate with 99 percent confidence (120/121) that no serious injury or fatality will result from all of those takes. But its own conclusions as shown below in the impact determination discussion do not have that level of confidence but rather to expectations and anticipations.

Those conclusions speak to confidence levels that statisticians would assign a level of confidence to of 75 percent or less. Using a 25 percent chance of being wrong the allowed take percentage to meet one instance of serious harm of fatality would

have be about one percent (Allowed % x 0.25 x population (350) =1)) to make the two criteria reasonably consistent, which would be in line with the above studies and within the upper limit set by the Evans Court decision.

Conversely, allowing 33 percent of the population in level B takes or 121 with the likelihood that 25 percent of those could result in serious injury or fatality means that 30 animals could be so harmed. That is 43 times the potential biological removal level of 0.7 defined by NMFS for the right whale as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population. That would clearly be more than "reasonably expected to" and "reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment and survival" and constitute a non-negligible impact.

The NMFS has not provided any science or mathematically-based support for its one-third number. It is also inconsistent with a prior Court decision. It needs to redefine a science-based population percentage for "small numbers" based on the above considerations. In doing so, we suggest that a distinction be made between endangered and critically endangered species. It should also by now accept the fact that the proposed survey, and similar ones, will contravene any sensible allowed Level B Take "small numbers" percentage, and rather than struggle with descriptive adjectives, work to restrict survey proposals spatially and timewise as proposed in Section B.13.

9. The 160 dB criteria for determining whale disturbance may be too high.

The general Level B harassment thresholds currently relate only to impulsive (160 dB) and continuous sources (120 dB). No justification is provided for the NMFS's application of the 160 dB impulsive level to e.g., CHIRP sub bottom profilers, which are neither impulsive nor continuous sources, but rather non-impulsive, intermittent sources. This issue has been raised numerous times by the Marine Mammal Commission, e.g., in their letter of March 19, 2019 on the Southeast Fisheries Science Center's letter of authorization.

They suggest that this NMFS practice does not reflect the current state of understanding regarding the temporal and spectral characteristics of various sound sources and their impacts on marine mammals, and that a lower, more precautionary Level B harassment threshold of 120 dB re 1 µPa would be more appropriate than the 160-dB re 1 µPa threshold until thresholds are updated. We share their concern, have yet to see and would welcome a cogent response to it and their sensible recommendation.

Compounding this concern is that, as shown above with a more realistic, practical 15 dB noise loss factor. the distances to meet even the 160 dB criteria are considerably larger. It is well known that discrete noise signals lose that characteristic and become of a more continuous nature as they travel longer distances due to variations in noise transmission paths. This would seem to be

especially applicable to those sources with wider beamwidth, longer pulse durations, and higher pulse reputation rates.

The need to consider a lower criteria level is also supported by field observation on bowhead whales. It has been difficult to observe the direct response of right whales to man-made noise because they are so critically endangered and sparse. But bowhead whales are a close relatives of the right whale and an excellent proxy for assessing behavioral impacts to them. Displacement of bowhead whales from air gun noise, another impulsive source, has been shown to occur at received levels of 120 to 130 dB (see Richardson, W.J., G.W. Miller, and C.R. Greene, Jr. 1999. Displacement of migrating bowhead whales by sounds from seismic surveys in shallow waters of the Beaufort Sea. The Journal of the Acoustical Society of America 106(4): 2281).

If the 120 dB criteria were applied to the Dura spark units using the 203 dB source number the noise loss required would be 83 dB versus the 43 dB reduction required for 160 dB. That would substantially increase further the distances required to ensure that the whale's behavior is not disturbed. The NMFS needs to provide a thorough analysis of this issue.

10. The NMFS conclusions regarding "negligible impact" and "small numbers" are not supported.

Based on the above higher revised take numbers in Tables 1 and 3 using the appropriate propagation loss factor of 15 dB, and the need to analyze the other potential pathways to serious injury or death discussed in Section B.6, and others, the negligible impact determination for the Atlantic Shores survey regarding the right whale is flawed because;

It significantly underestimates takes.

It says that "Level A harassment is not expected due to the small PTS zones associated with HRG equipment types proposed for use". But the NMFS apparently never did a cumulative exposure analysis with a proper noise propagation loss factor for the Dura-Spark unit. The analysis above in Section B.5 and Table 3 suggests that a plausible case can be made for the likelihood of 19 cases of PTS occurring.

It assumes that the number of level B takes is small. But that number was based on a low noise source level for the Dura-Spark unit, and a scientifically unsupported high propagation loss factor of 20 dB for the devices. Using the 15 dB loss factor, the number of Level B takes jumps from 17 to 95 or 340 respectively, depending on use of the 203 dB versus the 211 dB source noise level for the Dura-Spark unit.

It is not mathematically supported.

As discussed above in Sections B.7 and B.8, with respect to the right whale, almost near certainty in a prediction of not one case of serious harm or fatality is required to find a negligible population impact to the species. But throughout the negligible impact section discussion, including that for the right whale, NMFS only reaches qualified supporting conclusions using words and phrases such as "does not anticipate", "unlikely", "expects", or "is not expected to occur ". Those expressions at best speak only to something below seventy-five per cent confidence as described in Section B.8.

Allowing 95 level B takes for the Dura Spark unit in Table 3 with the probability that 25 percent of those could result in serious injury or fatality means that 23 animals could be seriously harmed from reactions to level B takes. That is 33 times the potential biological removal level of 0.7 defined by NMFS for the right whale as the maximum number of animals, not including natural mortalities, that may be removed from a marine mammal stock while allowing that stock to reach or maintain its optimum sustainable population. That would clearly be more than is "reasonably expected to" and "reasonably likely to, adversely affect the species or stock through effects on annual rates of recruitment and survival" and therefore would constitute a non- negligible impact.

Despite the qualifiers throughout, at the conclusion, the qualifiers disappear and the NMFS concludes with certainty that "any takes that occur *would not result* in population level impacts". That final conclusion does not flow logically or mathematically from the prior ones, and also contradicts the results of other studies such as that by Lusseau and Bejder titled, The long-term consequences of short-term responses to disturbance: experiences from whale watching impact assessment, November 2006.

It does not thoroughly assess all the paths to harm from Level B takes.

On page 4210 of the proposed IHA Notice, the NMFS properly states that behavioral disturbance may include a variety of effects ranging from subtle changes of behavior to more sustained and or potentially severe reactions. But it never says what all the more sustained or potentially severe reactions might be, so it is not possible to know whether the NMFS has even considered them in the conclusions reached in the FR notice.

It presents no analytic assessment of the impact of communication masking on the potential separation of mothers and calves, or on the whale's migration as a whole.

Regarding impact on the migration itself, the FR Notice states on page 4223 that NMFS considers the context of responses, including migration, to determine impact, but there is no subsequent analysis or conclusion regarding impact on migration, through reaction to Level B exposures or masking of the whale's sound capabilities that it uses for navigation.

A recent in-depth review of behavior response studies titled, A systematic review on the behavioural responses of wild marine mammals to noise: The disparity between

science and policy, November, 2016, identified a number of studies specifically associated with whale traveling, migrating, and directional swimming. NMFS should have reviewed those studies for applicability here and present the results.

There is also a logical inconsistency in the proposed IHA FR Notice regarding level B takes. On page 4210, it properly states that behavioral disturbance may include a variety of effects ranging from subtle changes of behavior to more sustained and or potentially severe reactions. It properly states that behavioral responses are highly variable, context specific, and difficult to predict. It properly points out that behavior disruption can also occur through masking of the whale's sound capabilities. Yet when it comes to the negligible impact discussion regarding the right whale on page 4224 from level B harassment, all of that potential severity, complexity and variability is dispensed with in a short, superficial, conclusory discussion without scientific support.

It does not meet a reasonable "small numbers" criterion.

The determination discounts the impact of a "small" number of Level B takes, but again relying on the 141 m zone based on the inappropriate 20 dB propagation factor. But with a realistic noise propagation factor of 15 dB and even the lower 203 dB source level, the 95 estimated level B takes alone is now quite large, i.e., 27 percent of the right whale population.

It says on page 4225 that when the predicted number of individuals to be taken is less than one-third of the species abundance, that is considered to be "small numbers". As discussed above in Sections B.7 and B.8, that percentage hardly seems small when considering a critically endangered whale, and the NMFS should provide justification for it or revise it.

That one-third number is inconsistent with the NRDC vs. Evans decision, where the Court found that "a definition of "small number" that permits the potential taking of as much as twelve percent of the population of a species is plainly against Congress's intent".

Nevertheless, even the one-third criteria may be exceeded for the Atlantic Shores survey alone. One-third of the revised NMFS the stock number of 350 is 115 takes. With the use of the 15 dB loss factor and even the low noise source level of 203 dB, and the NMFS FR vessel survey and density data, we calculate 95 Level B and 19 Level A takes for a total of 114 takes which comes very close to even the 33 percent 121 takes. With the 211 dB source number the 340 predicted Level B takes alone would exceed the one-third criteria. So, it is not clear that even a high one-third criteria for "small numbers" will be met just for the Atlantic Shores survey alone.

Furthermore, the NMFS has also approved marine site characterization surveys by the Ocean Wind II project in much the same geographical region running concurrently with that of Atlantic Shores (See FR Notice, Volume 87, No. 93, of May 13, 2022). The estimated right whale level B take for that authorization was 9 per

year (see Table 1 of the FR Notice). But that estimate also inappropriately assumed spherical spreading throughout, and used the 20 dB noise propagation loss factor. Using the more appropriate practical spreading loss factor a 15 dB would increase the 9 takes to 47. So, the total number of level B takes alone in the same geographical region would be about 142 (95+47) which exceeds the even high one-third NMFS criteria of 121.

The impact determination is also based on a number of other incorrect premises:

It implies that the impact of noise is less important by stating that vessel strikes and entanglements are the primary cause of death for the majority of road whales. That is true now, but it misses the point, that given that existing risk, no further risk should be presented to the whale to try to preserve it.

It relies on the misleading comparison described in section B.4 above comparing the spatial extent of the sound produced from the survey to the huge area extending out on the continental shelf, without showing the relatively narrow, approximately 12-mile wide, dominant migration corridor for the right whale, which is concentrated near the survey area, and in some places intersects with it.

If attempts to amplify that comparison by stating that the spatial extent of the sound produced by the survey would be very small, presumably referring to the 141 m radius. But as seen in Section B.3 that smaller area only came about by using an inappropriate sound propagation loss factor. Using a more realistic factor of 15 dB which the NMFS has used in other recent take authorizations, and even the lower Dura-Spark source level, the radial distance to the Level B criteria increases five-fold.

It then goes on to say that "no ship strike is expected to occur during Atlantic Shore's proposed activities", based on its "vessel avoidance measures" and the low 141 m radius. But the 141 m radius has been discounted here, there is no mention of how visual observations will prevent survey vessel strike at night, and there was no consideration of the experimental results observed by Nowacek et al., of noise stimuli causing right whales to ascend and swim just below the surface, increasing their risk of vessel strike. The latter is a particularly glaring omission since the Coast Guard has proposed to use the migration corridor area as a deep draft vessel lane.

The FR notice says that NMFSs expects that all potential level B takes would be in the form of temporary avoidance of the area. But in a migratory setting where the whale is not returning to the same area, it's not even clear with that means.

The determination assumes that above level B exposures will be a short duration and not repeated by the same animal. But that is not clear because the number of takes is now large and the migrating/moving whales and the survey vessels could encounter each other again.

The NMFS needs to go back and do an in-depth (see, e.g., An interim framework for assessing the population consequences of disturbance, Stephanie L. King, et.al., June 30, 2015), science-based and preferably numerical analysis of the potential for serious injury or death from PTS hearing loss, reactions from the now higher number of above Level B exposures, and from masking of the whale's sound capabilities, both directly and on its migration, and not just rely on conclusory phrases and suppositions, without specific and relevant scientific support for them.

11. A Rulemaking and Letters of Authorization are required for these surveys.

The MMPA, through its implementing rule CFR 216.105 requires a rulemaking "for allowed activities that may result in incidental takings of a small number of marine mammals by harassment, serious injury, death, or a combination thereof". Serious injury is defined in 50 CFR 229.2 as "any injury that would likely result in mortality". Assessments where harassment and/or serious injury or death may occur require a rulemaking per CFR 216.105.

The analysis in Sections B.15 and B.6 above regarding the right whale resulting in the potential for 19 instances of PTS hearing loss constitutes serious injury.

The large number of level B takes shown in Tables 1 and 3 using the appropriate propagation loss factor of 15 dB, coupled with the other potential paths to harm identified in Section B.6, and perhaps others, makes it plausible that other serious injury and/or fatalities can occur from such exposures. The masking of the whale's sound capabilities could also impair its migration and have population impacts.

As discussed above in Section B.6, the NMFS has not adequately analyzed these paths. Therefore, it needs to prepare a rulemaking if it is to justify marine mammal taking for this proposed survey activity.

In response to our request for programmatic-type Incidental Take Regulations the NMFS states that the MMPA only allows for the development of the Incidental Take Regulations upon request (presumably by the applicant). We do not read the Act that way. Certainly, there must be an initial request by an applicant to perform an action to initiate a review. However once that request is received, it is at the Secretary's discretion-not the applicant's- whether to pursue that request through regulation, Section 101(a)(2)(5)(A), or harassment authorization (D).

That decision rests on whether the activity will result in taking more broadly, including potential serious injury or death, or harassment only, as well as the timeframes involved, five years or less for regulation, one year or less for harassment authorization.

So again, we would urge the NMFS to conduct such a programmatic rulemaking with a full analysis of the cause and effect issues, consider cumulative impacts, and develop some programmatic rules of the road for survey actions, rather than repeat

this contentious exercise on every survey activity and renewal. As discussed in Section C.2 below, the Programmatic Biological Assessment prepared under ESA requirements, due to some calculation errors, doesn't accomplish this.

12. A Passive Acoustic Monitoring (PAM) System is required as one means of effecting the least practicable adverse impact.

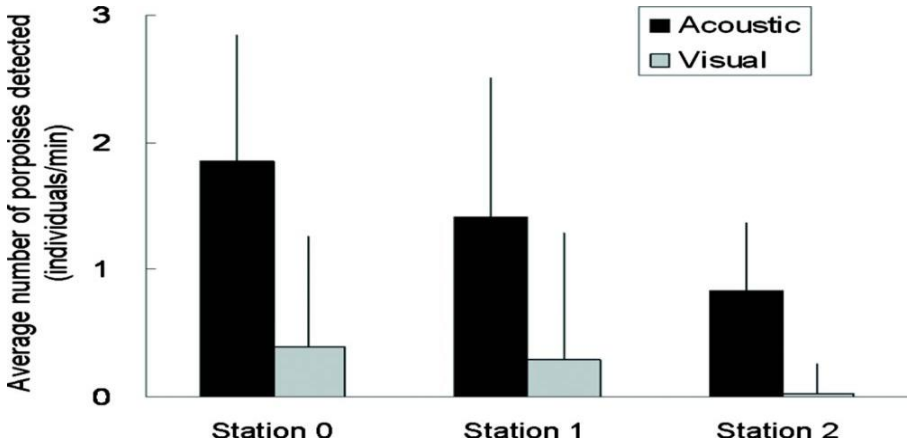
The limitations on visual detection of marine mammals have been well documented, e.g., see the World Wildlife Federation Report Titled Reducing Impacts of Noise from Human Activities on Cetaceans, 2014, Section 5.

The proposal here for visual monitoring only would seem especially unreliable given that survey activities are to continue year-round and at night, and now that the need for exclusion zones much greater that 500 m has been identified.

The monitoring proposal also seems lax compared to the agreement was reached between a number of environmental organizations and the Vineyard Wind project. There, geophysical surveys were prohibited during certain periods of the year with high whale presence, and a passive PAM system required to augment visual observation.

A two-year comparison of visual and acoustic detection in the study titled, A Comparison of Visual and Acoustic Autonomous Monitoring Methods for Investigating Temporal Variation in Occurrence of Southern Right Whales dated November, 2017, showed that a PAM system was six times more effective in identifying whale presence than visual methods.

A study done by Kimura et al., Kimura S, T Akamatsu, K Wang, D Wang, S Li, S Dong, and N Arai. 2009. "Comparison of stationary acoustic monitoring and visual observation of finless porpoises." *The Journal of the Acoustical Society of America* 125(1):547–553 compared visual and acoustic monitoring of the Yangtze finless porpoise. Acoustically the porpoise was detected approximately 82% of the observation times versus visual detection of about 13% of the observation times as shown in the results below. The PAM underestimated group size due to limited resolution of bearing angles, yet was more accurate than visual, especially with low-density populations, which is particularly relevant to detecting right whales.



Therefore, a PAM system should be implemented here as well in the right whale's primary migration corridor. In doing so however it should be recognized that the PAM systems are not perfect either, and are highly dependent on the distance from the mammal source to the receiver, and on background noise. For example, a study titled PamGuard Quality Assurance Module for Marine Mammal Detection using Passive Acoustic Monitoring, dated August 2020, found that (Figure 10) the mean probability of right whale detection varied from 0.9 to 0.5 at 500 m for low and high background noise conditions respectively. At 1500 m those probabilities drop to from 0.5 to 0.03, and are subject to wide statistical variation. For the 2500 m zone recommended here they would be even lower, so a sufficient number of monitors will be required.

Given the need for the larger than 500 m desired clearance zone that was identified above in Table 2, this will require a PAM system consisting of additional survey vessels removed from the geophysical survey source vessel to avoid masking, and/or mono-buoys that can operate in near real time placed strategically. That is practicable if the monitored area is limited to the right whale's primary migration corridor (Exhibit D).

In its response to our comments on the Atlantic Shores and Ocean Wind surveys the NMFS points to the limitations of PAM systems to support its rejection of it. We also pointed out its limitations, but as shown above, it is much more effective than visual detection, especially at night. In addition, those limitations can be overcome with proper spacing of monitors. Placing the required number of monitors is also feasible in this case because the right whale's primary migration corridor is fairly well defined (Exhibit D).

Given the high number of level B takes predicted here we would still strongly recommend to the NMFS that such a system be implemented to augment visual observations, and we find the rationale for the NMFS rejection at best perplexing.

13. Other measures and procedures are required to effect the least practicable adverse impact.

The IHA for the Atlantic Shores survey does not put forth all the "means of affecting the least practicable adverse impact" as required by the MMPA: the following measures should be included:

(a) The desired exclusion zone should be set at the higher 2500 meters in Table 2, consistent with the higher source number of 211 dB for the Dura-Spark unit and the 15 dB loss factor.

(b) The survey area should be significantly reduced to only that necessary to proceed with the currently proposed Atlantic Shores project,

(c) Survey activity should be prohibited at night unless a robust PAM system is employed,

(d) Survey activity should be prohibited in and near (a 2500-meter buffer) the right whale's primary migration corridor during its primary migration months of January, February, March, April and November. That leaves about sixty percent of the year to survey an area which appears to be less than 30 percent of the full survey area, which should be doable through good scheduling alone, which is certainly practicable.

It should be noted that this measure is consistent with that suggested by the New Jersey Department of Environmental Protection (NJDEP) in a letter to the National Science Foundation (NSF) of March 6, 2015 regarding a marine geophysical survey by the R/V Marcus G Langseth in the Atlantic Ocean off New Jersey in 2015. On page 9 of that letter the NJDEP acknowledged the migration of the North Atlantic right whale occurring "mostly between November and April" and therefore recommended that the NSF survey be limited to a September to October time frame.

(e) An Annual Seasonal Management Area (SMA) should be established in and adjacent to the survey area, to mitigate against vessel strike.

C. Endangered Species Act (ESA) Compliance

1. Background.

Consultation under Section 7 of the ESA is required whenever a discretionary agency action "may affect" any listed species or its critical habitat, and the assessment of whether that low threshold has been satisfied must be based on the "best available" science.

Under the ESA, take is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct." Harm is defined by regulation (50 C.F.R. §222.102) as "an act which actually kills or injures fish or wildlife. Such an act may include significant habitat modification or

degradation which actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including, breeding, spawning, rearing, migrating, feeding, or sheltering." NMFS does not have a regulatory definition of "harass." However, on December 21, 2016, NMFS issued interim guidance on the term "harass," under the ESA, defining it as to "create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavior patterns which include, but are not limited to, breeding, feeding, or sheltering." The NMFS interim ESA definition of "harass" is not equivalent to MMPA Level B harassment. Due to the differences in the definition of "harass" under the MMPA and ESA, there may be activities that result in effects to a marine mammal that would meet the threshold for harassment under both the MMPA and the ESA, while other activities may result in effects that would meet the threshold for harassment under the MMPA but not under the ESA.

To approve such an action the agency must demonstrate through biological assessments (BA's) and opinions (BO's), where required, that the action is not likely to jeopardize the continued existence of a listed species. As shown above in Section B.7, for the North Atlantic right whale, that means it must be demonstrated with very high confidence that not a single whale will suffer serious injury or a fatality from the survey.

2. The documentation provided is not sufficient to meet ESA requirements.

The Federal Register Notice for the proposed Atlantic Shores ITA did not mention compliance with ESA. However, the website included a document labeled ESA Programmatic Consultation. That document is a letter to James Bennett, Program Manager, Office of Renewable Energy Programs, from Jennifer Anderson, Assistant Regional Administrator for Protected Resources, dated June 29, 2021, which is apparently intended to serve as the Biological Opinion (BO) supporting the Atlantic Shores ITA.

In its response to LBI comments the NMFS confirmed that it relied on that consultation opinion for these surveys. That document in turn in several places references a programmatic Biological Assessment (BA) prepared by the Bureau of Ocean Energy Management (BOEM) titled Data Collection and Site Survey Activities for Renewable Energy on the Atlantic Outer Continental Shelf (OCS), dated February, 2021.

A broader, programmatic look is desirable because the noise impacts on the right whale described here from the Atlantic Shores survey project will likely occur from other surveys as the whale migrates through its entire route (Exhibit E). However, neither of those existing documents can serve as the Section 7 consultation required to support the Atlantic Shores survey or the other actions for the reasons below.

First, a BO is required by CFR 402.14 to include a "detailed discussion of the effects of the action on listed species or critical habitat ", the presentation of any

reasonable and prudent alternatives, any reasonable and prudent measures, and a conclusion regarding whether the proposed action is likely to jeopardize the continued existence of a listed species.

None of that is included in the BO. For example, regarding a detailed discussion there is only one page that qualitatively discusses the effects on marine mammals of level B takes for the entire Atlantic Coast seaboard. That is in stark contrast to addressing the noise related impacts of geological and geophysical activities in the Gulf of Mexico and the mid and south Atlantic OCS area in two prior environmental impact statements.

Second, when a "no jeopardy" BO is issued — or when there are reasonable and prudent alternatives to the proposed action — it must include what is known as an "incidental take statement" addressing certain elements of the project's potential to "take" a species. See 50 C.F.R. § 402.14(i).

The information that an agency must produce regarding "take" is laid out below:

If after consultation under subsection (a)(2), the Secretary concludes that — (A) the agency action will not violate such subsection [i.e., through a no-jeopardy BiOp], or offers reasonable and prudent alternatives which the Secretary believes would not violate such subsection; (B) the taking of an endangered species or a threatened species incidental to the agency action will not violate such subsection; and (C) ***if an endangered species or threatened species of a marine mammal is involved, the taking is authorized pursuant to section 1371(a)(5) of [the MMPA, discussed below];*** *the Secretary shall provide the Federal agency and the applicant concerned, if any, with a written statement that —* ***(i) specifies the impact of such incidental taking on the species,*** *Case 1:18-cv-00112-JEB Document 219 Filed 07/08/22 Page 8 of 43 9 (ii) specifies those reasonable and prudent measures that the Secretary considers necessary or appropriate to minimize such impact, (iii) in the case of marine mammals, specifies those measures that are necessary to comply with section 1371(a)(5) of [the MMPA] with regard to such taking, and (iv) sets forth the terms and conditions (including, but not limited to, reporting requirements) that must be complied with by the Federal agency or applicant (if any), or both, to implement the measures specified under clauses (ii) and (iii). 16 U.S.C. § 1536(b)(4).*

The BO contains no such specification of the impact of taking. It does not even include any Level B take estimates, but only concludes on page 18 that the effect of any exposure above 160 dB from a moving survey vessel will be insignificant, raising the question of why a BO, BA and IHA analysis are done at all.

Third, the estimate of the level B disturbance distance in Table 5 of the BO of 502 meters is significantly underestimated because it uses the same

unsupported 20 dB loss factor discussed above. That is confirmed on page 62 of the BA.

Fourth, the Sparker unit source level in Table 1 of the BA of 214 dB is inconsistent with the 203 dB value being used for the ITA.

Fifth, the value of 214 dB in Table 5 of the BO specifically for the Dura Spark unit is inconsistent with the 203 dB value being used for the ITA. Using the 214 dB sparker source level and the better 15 dB loss factor presented above would result in a disturbance distance of 3,414 meters, considerably larger than 502 meters.

Finally, the NMFS cannot rely on the take estimates in the BA for ESA compliance. Those are further underestimated due to a flawed assumption regarding the area affected. In that BA the BOEM uses only the area leased or to be leased, and the accompanying right of ways as the ensonified area, i.e., the area experiencing above criteria noise levels. But that does not account for the direction provided on page 12 of the BA that vessel survey lines be conducted at 30-meter line spacing over the proposed areas. That means, even for the 502-meter distance in the document, that a particular section of a lease area will experience Levels above 160 dB multiple times. Nor does the BA account for exposure over multiple years.

For example, for the Atlantic Shores IHA even using the 20 dB factor the ensonified area calculated for 120 days of survey in the lease area is 1868 km². Scaling that up to 360 days to compare it with the BA leads to an ensonified area of 5605 km². But the lease area itself is only 742 km². That results in a magnification of the disturbed area relative to the lease area by a factor of 7.5. For larger disturbance distances that magnification would be even greater.

This results in an erroneous annual level B take or exposures above 160 dB for the North Atlantic right whale of about 30 in Table 25 of the BA, for the entire Atlantic Coast seaboard as the survey area. The level B take here just for the Atlantic Shores proposed survey area is 17, using the same 20 dB loss factor so the two numbers are not consistent with each other, and it becomes clear that the 30 number for the entire seaboard cannot be accurate.

Therefore the NMFS has no reliable programmatic level B take number for the right whale to base its conclusions on. With a proper methodology, the number of level B takes for the entire seaboard would likely be quite high, just for one year. As mentioned above, the indirect effects of those takes could cause serious harm or even fatality and needs to be analytically addressed. It is not credible for the NMFS to dismiss this in one page of qualitative assumptions in the BO.

All this leaves no credible BA or BO to support compliance with the ESA for the Atlantic Shores survey, and the other two. In addition, according to NMFS Technical Guidance a programmatic assessment is not meant to supplant a project specific one, but only to streamline it.

Considering the different survey areas, the uncertainties in equipment noise source levels, the unique proximity of the right whale's primary migration corridor to this survey area, and the need to use a more appropriate noise propagation loss factor, the NMFS needs to do survey specific BAs and BOs to comply with the ESA.

D. The Coastal Zone Management Act.

The proposed survey may not be consistent with New Jersey Coastal Zone Management (CZM) rules, specifically NJAC 7:7E–3.38. That provision protects against adverse impacts occurring to New jersey coastal resources, including endangered wildlife habitats.

In a letter from the New Jersey Department of Environmental Protection (NJDEP) to the National Science Foundation (NSF) of March 6, 2015 regarding a marine geophysical survey by the R/V Marcus G Langseth in the Atlantic Ocean off New Jersey in 2015, the NJDEP found that survey to be inconsistent with that rule provision and others.

The current survey extends into State territorial waters and the State's coastal zone. As discussed above the noise impacts from the survey could directly or indirectly harm endangered whales not just the North Atlantic right whale, but fin and humpback whales that frequent the area. In addition, noise from survey activities outside the State's coastal zone could alter marine mammal behavior and their use of the States coastal resource.

The NMFS should have sought a CZM consistency determination from New Jersey.

Conclusions

The NMFS uses as a noise source level of 203 dB for the controlling Dura spark unit which is low compared to the source level for that unit in numerous other technical sources that underestimates the level A and B takes.

The NMFS uses a noise propagation loss factor that is too high, not consistent with current scientific norms or with the factor used by NMFS in other take authorizations, and which significantly underestimates distances to meet criteria and level A and B takes.

The NMFS uses a 33-percent small numbers criteria that is not scientifically supported, inconsistent with a prior court decision, and with its other potential biological removal criteria.

Nevertheless, using the 211 dB source number and the 15 dB loss factor even the one-third criteria would be exceeded for the Atlantic Shores survey alone. Even with the 203 dB value the number of predicted takes (114) comes very close to the one-third number (121 takes).

It refuses to add together and consider the impacts of three separate surveys operating in the same area at the same time. With the more realistic propagation loss factor of 15 dB the total number of level B takes from all three surveys is 187 which exceeds the even the unjustifiably high 33 percent small numbers criteria.

In the face of these large take numbers, it refuses to require a passive acoustic monitoring program which could augment visual observation and would rather rely solely on visual observation, even at night to detect whales.

It refuses to restrict surveys during the predominant right whale migration months in its primary migration corridor.

To at least better understand the problem, it refuses to prepare an environmental assessment, conduct a letter of authorization rulemaking, or prepare relevant and up to date ESA documents.

Regrettably we would suggest that this is all a bridge too far and does not represent reasoned decision making,

Remedies Sought

1. The Atlantic Shores and the other two survey IHAs should be rescinded and any survey action enjoined pending statutory compliance.

2. Regarding the NEPA, at a minimum,

- an environmental assessment should be prepared.

- the NMFS should consult with the BOEM and provide a satisfactory answer to the question in Section A.2 regarding the unexplained large geographical scope of the survey relative to the current Atlantic shores project.

3. Regarding the MMPA, given the potential for serious injury and fatality, the NMFS should proceed through a rulemaking as required by CFR 216.105, which should include:

- use of the 15 dB propagation loss factor, and the 211 dB noise source level, and a numerical estimate of plausible cumulative Level A PTS exposures,

- an in-depth science-based analysis of all the paths to harm from the now large number of expected Level B takes, and from masking of the whale's sound capabilities, and a demonstration with very high confidence that not a single serious injury or fatality to the right whale will result from any of those paths.

- a revised science-based population percentage for allowed "small numbers" of Level B takes, and include a distinction between endangered and critically endangered species.

- a consolidated review of all three survey projects, or at a minimum, a section on the cumulative impact of recent authorizations, those being considered concurrently and those that are reasonably foreseeable, so that the full impact on endangered mammals can be seen and considered in making decisions.

4. Regarding the ESA, the Programmatic Biological Assessment and Biological Opinion should be updated, and supplemented with survey-specific ones that cover all three survey actions.

5. Regarding the Coastal Zone Management Act, consistency determinations for the survey projects should be sought from the State of New Jersey.

Bob Stern

Bob Stern, Ph.D., President
Save Long Beach Island, Inc.
drbob232@gmail.com
917 952-5016.

Incidental Harassment Authorizations for Atlantic Shores Marine Site and other Survey Actions

Save Long Beach Island, Inc., Exhibits.

Exhibit A. Proposed Survey Area, Atlantic Shores Project

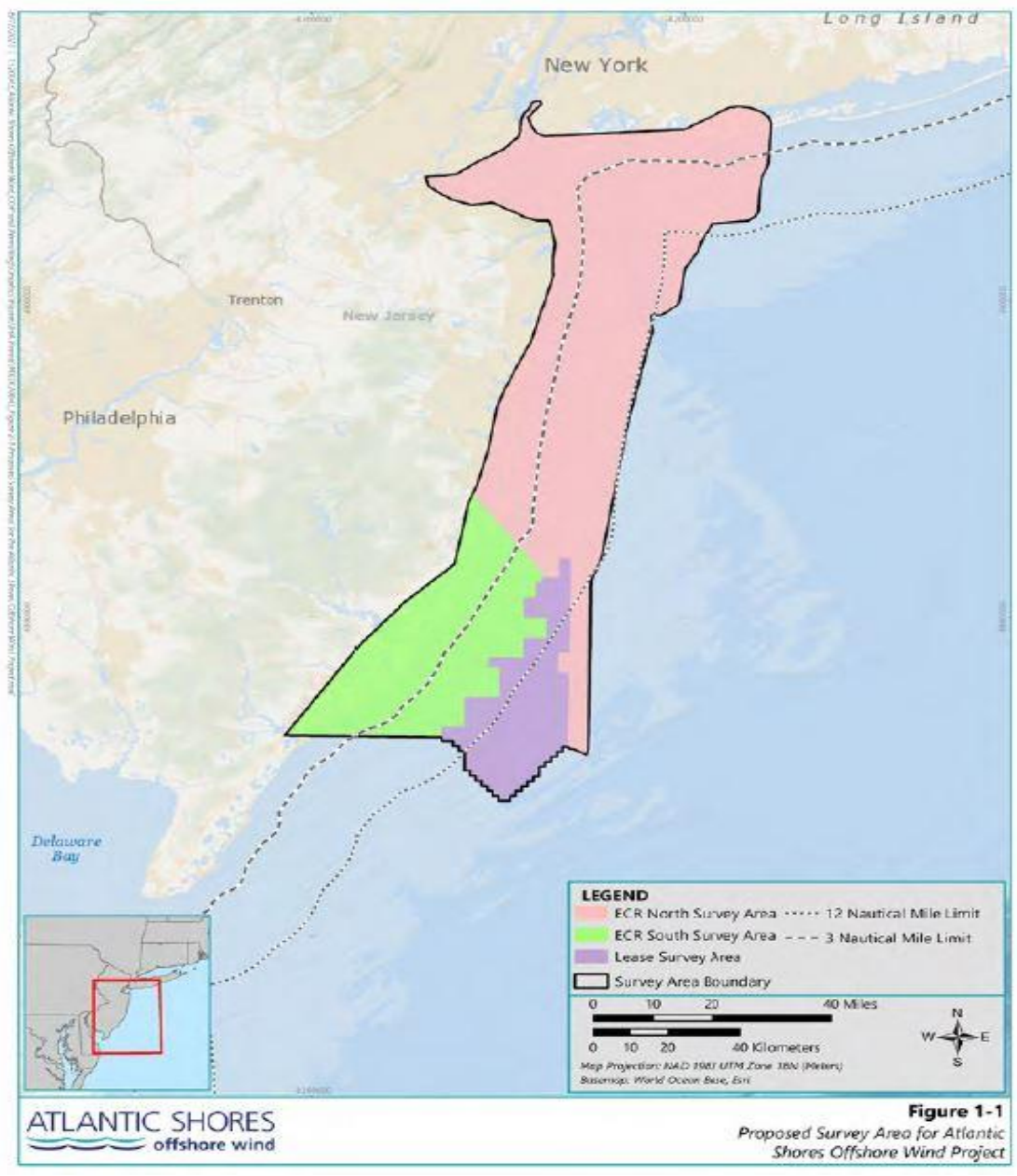


Exhibit B. Lease Area & Proposed Cable Routes, Atlantic Shores Project

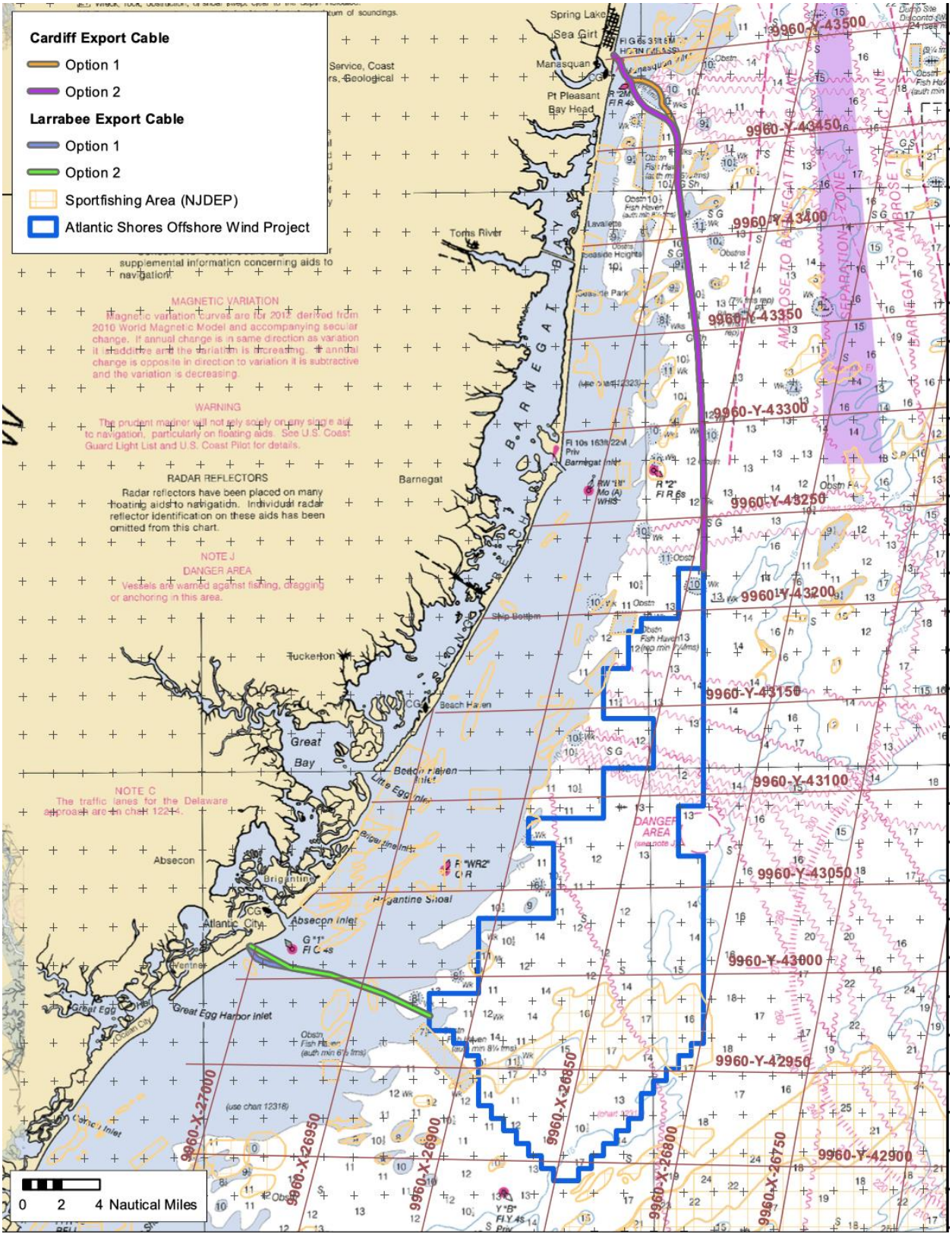


Exhibit C. Survey Area for the Ocean Wind Project

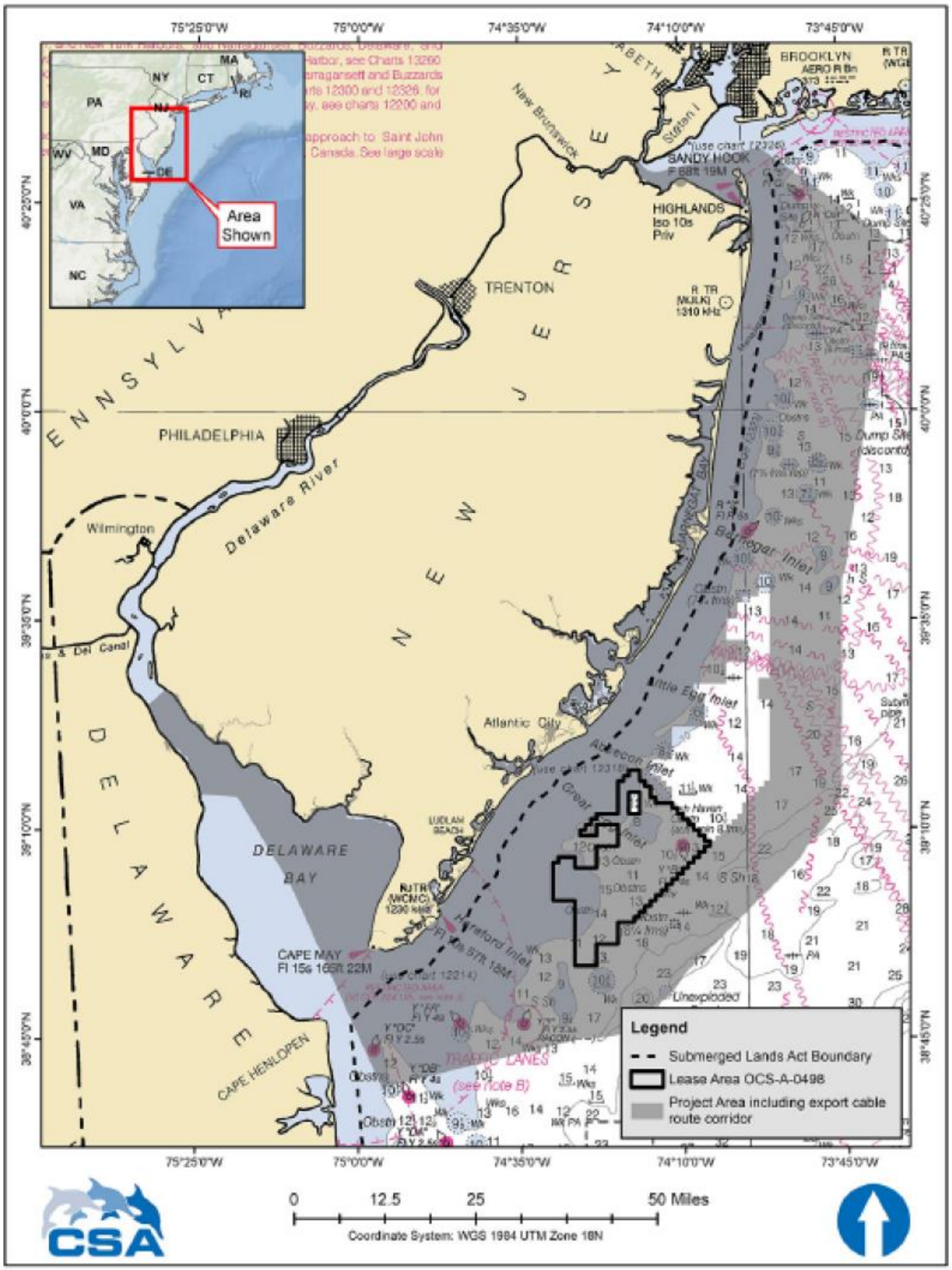
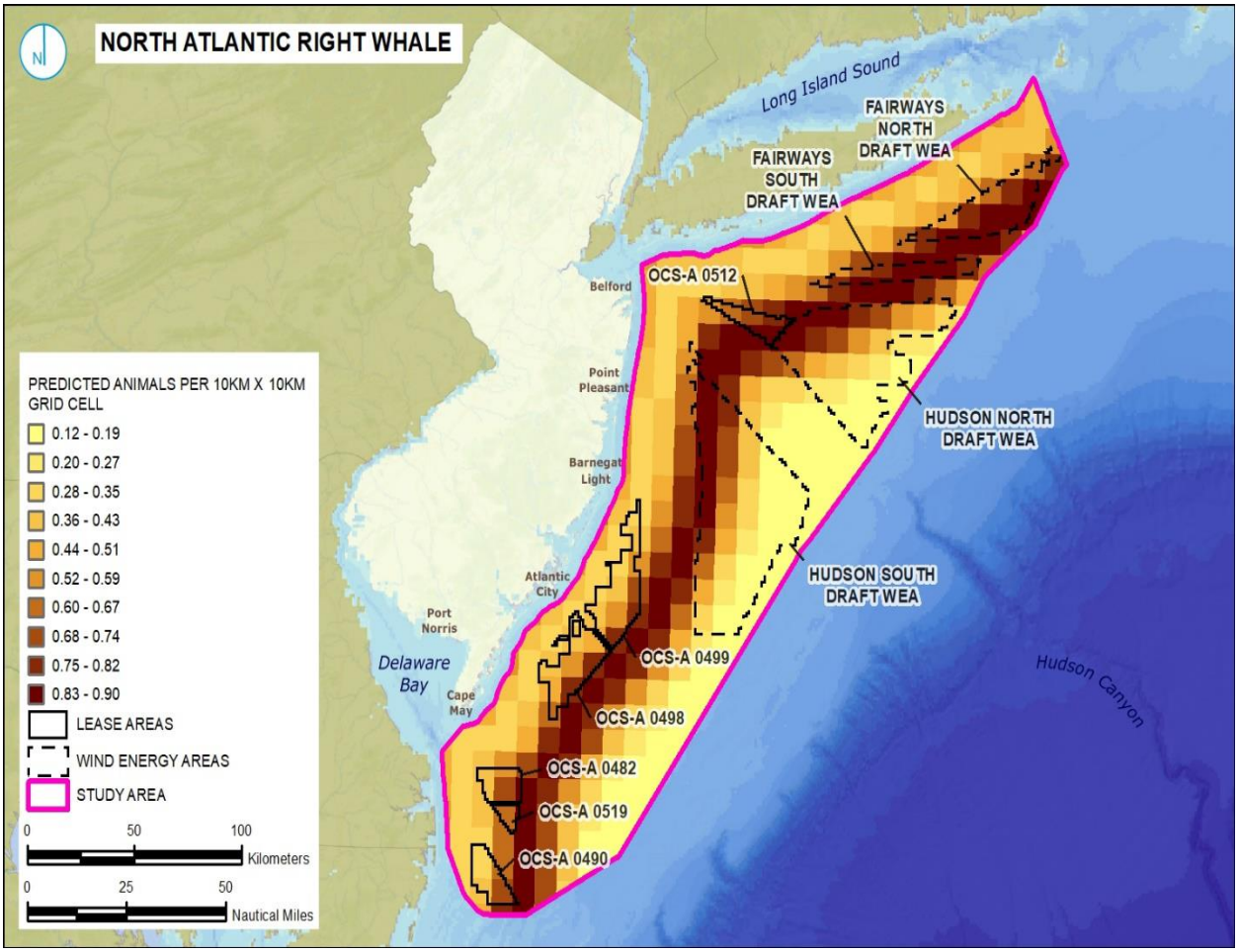


Exhibit D. Right Whale Migration Density-Annual Basis



Key Points: The annual abundance of the NARW is highest in the study area at depth contours between 30 and 40 meters, at up to 0.9 animals per 100 km_2. Areas that are shallower (as well as much deeper) than this range show less relative density, including significant portions of existing wind lease areas and WEAs. The NARW high abundance areas are present in all lease areas and draft WEAs but do not exceed 0.9 individuals per 100 km_2.

Source, NJ Offshore Wind Strategic Plan, Natural Resource Technical Appendix, Figure 21.

Exhibit E. Right Whale Migration Density for March

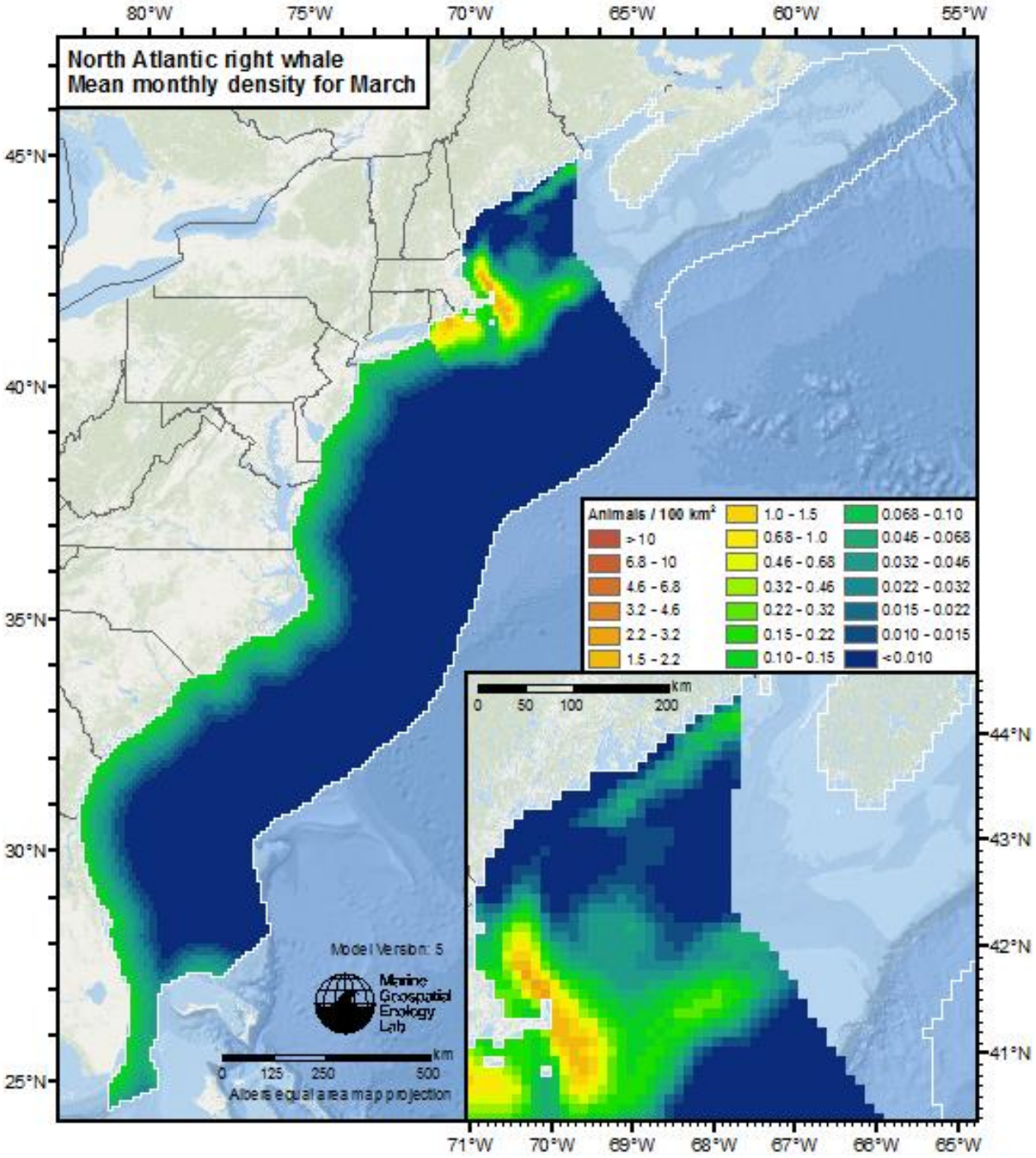
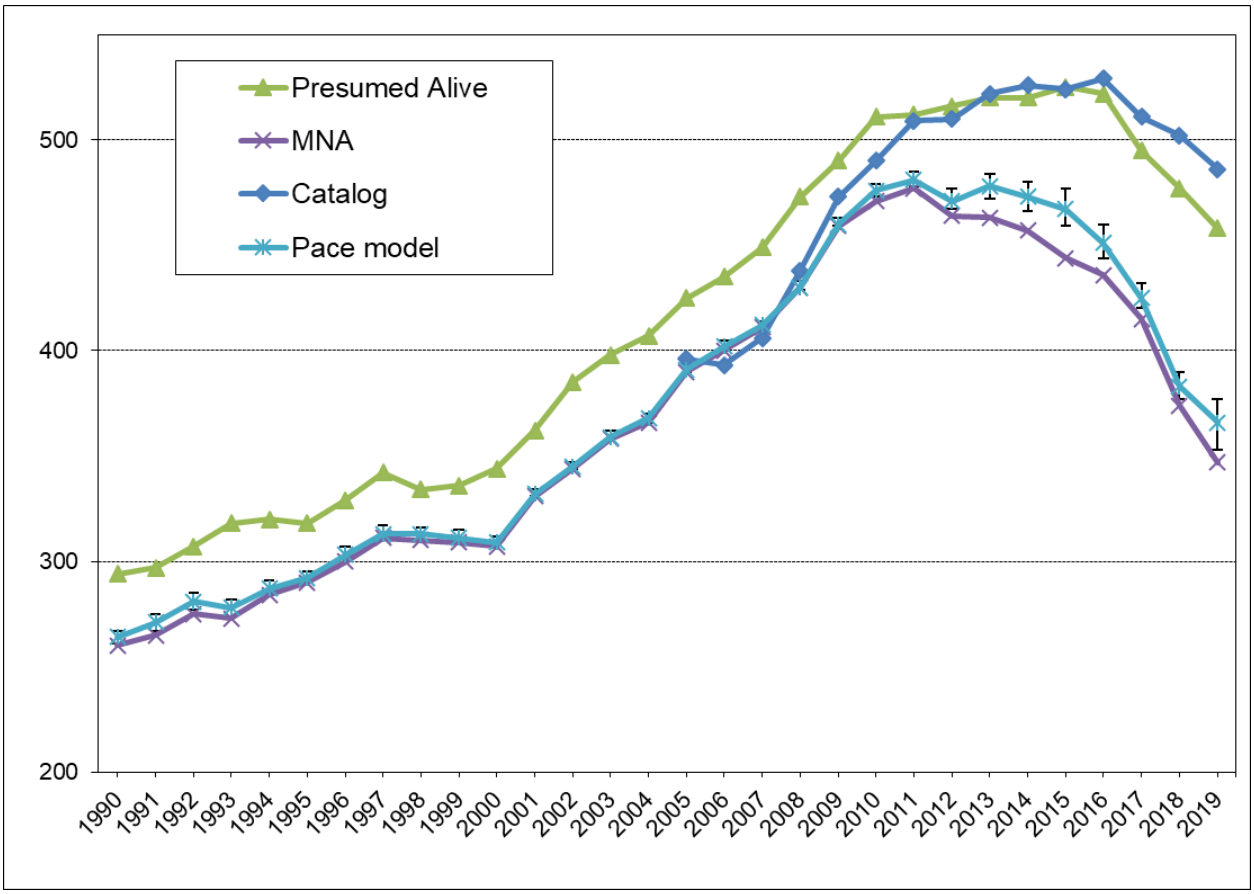
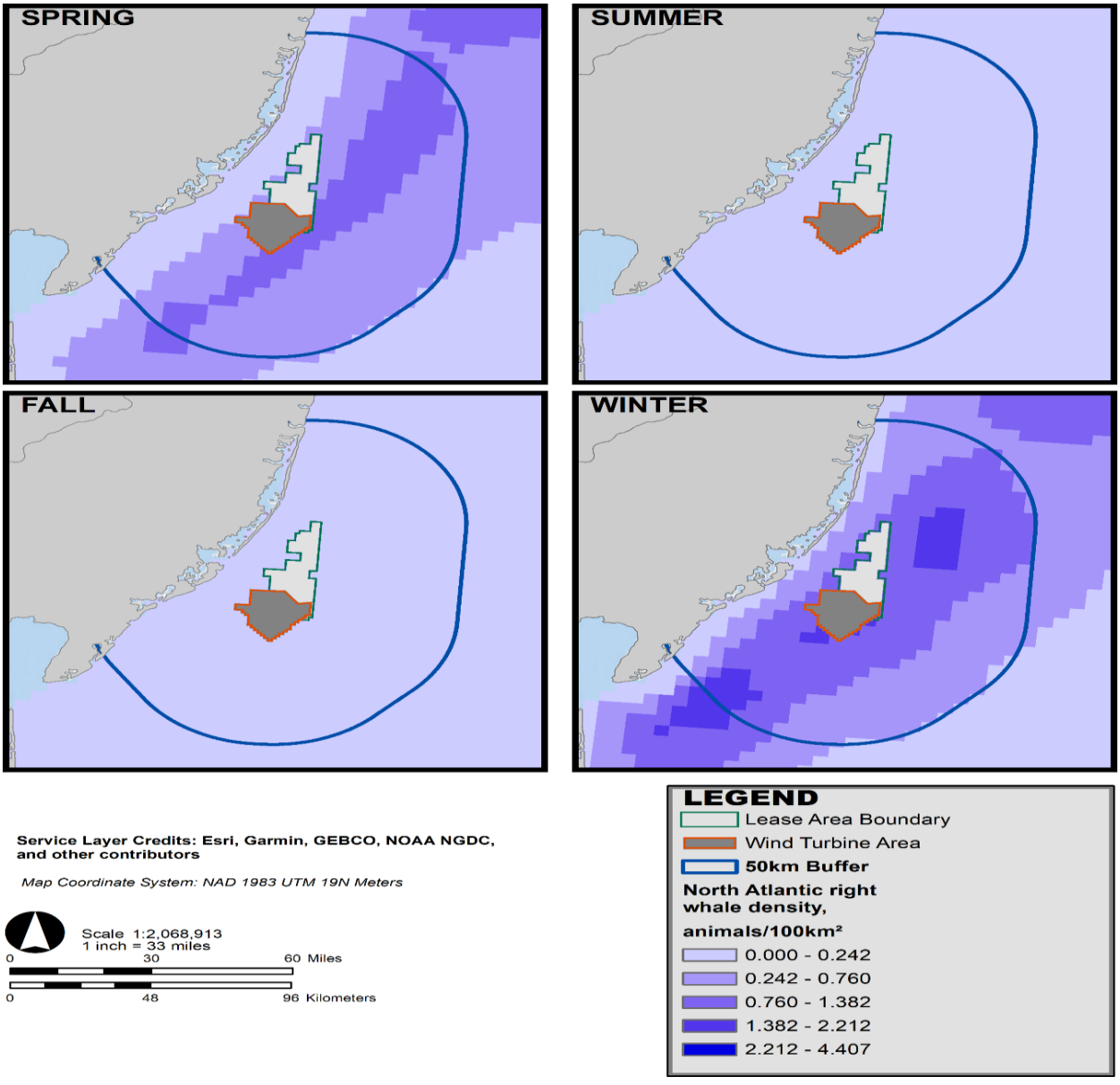


Exhibit F. North Atlantic Right Whale Population Trend



Source, North Atlantic Right Whale Consortium 2020 Annual Report Card Pettis, H.M. 1, Pace, R.M. III2, Hamilton, P.K.1. MNA=minimum number alive.

Exhibit G , NARW Density



Source: Atlantic Shores Offshore Wind Application for Marine Mammal Protection Act (MMPA) Rulemaking and Letter of Authorization Prepared by: JASCO Applied Sciences (USA) Inc. September 2022 Submitted to: Permits and Conservation Division, Office of Protected Resources, NOAA Fisheries, Figure 9. North Atlantic right whale maximum seasonal density from Roberts et al. (2016a, 2021a, 2021b).

itp Potlock - NOAA Service Account <itp.potlock@noaa.gov>

Incidental Take Authorization: Atlantic Shores Offshore Wind, LLC, Construction of the Atlantic Shores Offshore Wind Energy Projects

1 message

Kari Martin (Clean Ocean Action) <KMartin@cleanoceanaction.org> Tue, Nov 15, 2022 at 7:03 PM
To: "ITP.Potlock@noaa.gov" <ITP.Potlock@noaa.gov>
Cc: "Cindy Zipf (Clean Ocean Action)" <Zipf@cleanoceanaction.org>, "Kari Martin (Clean Ocean Action)" <KMartin@cleanoceanaction.org>

Dear Chief Harrison,

Clean Ocean Action submits the attached comments regarding the **Incidental Take Authorization: Atlantic Shores Offshore Wind, LLC, Construction of the Atlantic Shores Offshore Wind Energy Projects**.

Please contact me at Clean Ocean Action for questions or clarifications.

Sincerely,

Kari Martin

Advocacy Campaign Manager

Clean Ocean Action

49 Avenel Boulevard

Long Branch, NJ 07740

(p) 732.872.0111 (f) 732.872.8041

www.CleanOceanAction.org

citizens@cleanoceanaction.org

Give to support a clean ocean!

Like us on Facebook | Follow us on Twitter

Think Green! Only print this e-mail if necessary.

COA Final Comments - Atlantic Shores IHA LOA - Nov2022.pdf
777K

Clean Ocean Action
49 Avenel Blvd.
Long Branch, NJ 07740
Info@cleanoceanaction.org
732-872-0111

November 15, 2022

Jolie Harrison, Chief
Permits and Conservation Division
Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway
Silver Spring, MD 20910

RE: Incidental Take Authorization: Atlantic Shores Offshore Wind, LLC, Construction of the Atlantic Shores Offshore Wind Energy Projects

Dear Chief Harrison:

Clean Ocean Action ("COA") is a regional, broad-based coalition of conservation, environmental, fishing, boating, diving, student, surfing, women's, business, civic, and community groups with a mission to improve the water quality of the marine waters off the New Jersey/New York coast. COA submits the following comments in opposition to the request for an incidental harassment authorization ("IHA") filed by Atlantic Shores ("the Applicant") to incidentally take marine mammals in the course of the Applicant's construction of two offshore wind energy projects off the coasts of New Jersey and New York.

The Applicant requests to take at least 15,464 marine mammals, including endangered, threatened, and federally protected species, during the construction of two offshore wind energy projects. Specifically, Clean Ocean Action requests that the National Marine Fisheries Service ("NMFS") reject/deny this IHA application because it: (1) would allow thousands of Level A and Level B takings of endangered, threatened, and protected marine mammal species, including the crucially endangered North Atlantic Right Whale ("NARW"), which will have significant and more than negligible impacts on species; (2) will unacceptably add these impacts to the already detrimental cumulative impacts of the numerous IHA requests from the Applicant's previous activities and projects in the region, as well as by other offshore wind industry companies' IHA authorizations for surveys, construction, operation, and decommissioning of offshore wind facilities in the region, and (3) raises other issues of importance, including lack of fairness, transparency, and accountability.

Indeed, it appears there is no NMFS limits to the allowance of IHA impacts from the current applicants, much less for the full scope of pending proposals as provided by the NMFS:

> *By 2030 the Northeast large marine ecosystem will be occupied by over 2.4 million acres of leases, 3,400 turbines, and 10,000 miles of submarine cables; and an additional 5.7 million acres is also under consideration for further development.*[1]

It is impossible for marine mammals to adapt to such massive industrial scope and scale of development with each project at minimum causing the excessive impacts described by just one applicant's projects.

I. Excessive Takes of Marine Mammals

Under the Marine Mammal Protection Act ("MMPA"), citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region may request authorization for incidental, but not intentional, takes of "**small numbers**" (*emphasis added*) of marine mammals pursuant to that activity for a period of no more than five years.[2] The National Marine Fisheries Service ("NMFS"), which has been delegated the authority to administer the relevant legal framework, may allow takes under the MMPA only if the agency determines that the total number of authorized incidental takes during the five-year period will have a "negligible impact" on the relevant species or stock.[3] "Negligible impact" is, in turn, defined as an impact that is not reasonably likely or expected to "adversely affect the species or stock through effects on annual rates of recruitment or survival."[4] Finally, the applicable legal framework distinguishes between "Level A" takes and "Level B" takes. In the context of offshore wind energy development and related activities, "Level B harassment" refers to "any act of pursuit, torment, or announcement which has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering."[5] "Level A" takings, on the other hand, refer to "any act of pursuit, torment, or annoyance which has the potential to injure a marine mammal or marine mammal stock in the wild."[6]

1. North Atlantic Right Whales

First, COA objects to the Applicant's proposed baseline estimation that there are 368 individual NARWs remaining in the wild. This estimation is, as NMFS posits, consistent with the NARW stock assessment in the agency's 2021 Draft Stock Assessment Report ("SAR"). The 95% confidence interval for this estimation, notably, is 356-378 individuals. This confidence interval is notable because even the lower end of this range is still higher than the most recent census taken by the North Atlantic Right Whale Consortium ("the Consortium"), who announced in

[1] National Marine Fisheries Service, EBM/EBFM Seminar Series Announcement, September 2022, personal communication.
[2] 16 U.S.C. § 1371(a)(5)(A)(i).
[3] *Id*. § 1371(a)(5)(A)(i)(I).
[4] 50 C.F.R. § 18.27(c).
[5] 16 U.S.C. § 1362(18).
[6] *Id*.

October 2022 that just 336 individuals remain.[7] NMFS apparently agrees with the Consortium's assessment for most other purposes—for example, the agency's webpage for the NARW currently reads: "The North Atlantic right whale is one of the world's most endangered large whale species; the latest preliminary estimate suggests there are fewer than 350 remaining."[8] The NARW has been listed as endangered under the ESA since the statute was enacted in 1973[9].

As the proposed IHA's estimate of NARWs is based on a draft SAR that has not yet been finalized and NMFS openly defers to the Consortium's more conservative estimate of remaining individuals in other published materials, COA objects to NMFS's use of the 368-individual estimate in the proposed IHA, especially for purposes of calculating the percentage of remaining NARWs that the Applicant may incidentally harass in the course of its construction of two offshore wind facilities in the coastal waters off New York and New Jersey. The Applicant's request take limit of 33 NARWs amounts to 8.97% of the remaining individuals. However, when calculated using the Consortium's estimate of 336 remaining individuals, the Applicant's requested take limit of 33 rises to 9.82% of all remaining NARWs. As a matter of transparency, the proposed IHA's calculations should accurately reflect the quantifiable extent of the harm that it will permit the Applicant's activities to inflict on one of the planet's most endangered species.[10]

Second, COA objects to NMFS's conclusion that the proposed IHA's take limit of 33 NARWs for construction activities in the coastal waters between off New Jersey and New York will have a negligible impact on the species. Even when taking this claim at face value, the agency would authorize harassment of nearly 10 percent (10%) of the remaining 336 NARWs, which is significant in and of itself. Moreover, the impacts of activities authorized by the proposed IHA will compound those that already occurred under the terms of the Applicant's previous IHAs for site characterization, assessment, and construction activities for the Atlantic Shores' lease area OCS-A 0499 alone.

Moreover, the aforementioned sum must be considered alongside other takes of NARWs that NMFS has authorized for other wind activities along the species' migratory range from North Carolina to Maine, including site characterization, assessment, and construction activities that are simultaneously occurring for other offshore wind energy development (OWED) lease sites. It is also important to note that this IHA is the fourth consecutive IHA application for Atlantic Shores on this project and the NY Bight wind lease area. Especially in light of the NARW's critically endangered status, the ongoing Unusual Mortality Event that this species is experiencing and, consequently, the existential threat posed to the species by obstacles to even one individual's survival, the best scientific literature cannot justify the conclusion that harassing more than 10% of the species' 336 remaining individuals in a short timeframe for all of Atlantic Shores' projects

---

[7] H.M. Pettis, et al., *North Atlantic Right Whale Consortium 2021 Annual Report Card: Report to the North Atlantic Right Whale Consortium* (2022), NORTH ATLANTIC RIGHT WHALE CONSORTIUM https://www.narwc.org/uploads/1/1/6/6/116623219/2021report_cardfinal.pdf.

[8] *North Atlantic Right Whale*, NMFS (last accessed Feb. 7, 2022), https://www.fisheries.noaa.gov/species/north-atlantic-right-whale.

[9] See 35 FR 18319, December 2, 1970; 73 FR 12024, March 6, 2008.

[10] *See* Katharine Deuel, *New Rules to Protect Endangered Whales Fall Short,* PEW CHARITABLE TRUSTS (Nov. 17, 2021), https://www.pewtrusts.org/en/research-and-analysis/articles/2021/11/17/new-rules-to-protect-endangered-right-whales-fall-short.

can be characterized as negligible. This is particularly true upon consideration of the multitude of additional NARW takings that the Applicant will be pursuing for the operation and decommissioning phases of its projects.

Indeed, due to level A impacts from ship strikes and entanglements, the NMFS is proposing speed limits for ships and adding pot restrictions on lobster and Jonah crab fisheries; how do these actions compare to the allowances afforded to the offshore wind industry?

Regarding underwater noise, the Applicant states, "All construction schedules assumed 10 dB of sound attenuation and a proposed pile installation schedule from May through December to avoid and minimize the impacts to the North Atlantic right whale (NARW) (*Eubalaena glacialis*)[11]. However, NOAA Fisheries has documented NARWs in the Atlantic Shores region in that same timeframe. For example, a Right Whale Slow Zone southeast of Atlantic City was effective in December 2021[12]. Also, recent data from WhaleMap and the Mid-Atlantic Ocean Data Portal indicate an abundance of NARWs off the NJ coast throughout the year[13]. Further, according to NOAA, "each fall, some right whales travel more than 1,000 miles from these feeding grounds to the shallow, coastal waters of their calving grounds off of South Carolina[14]." As such NARWs migrate through the region covered in this IHA application.

It is also important to note that while it seems an "accommodation" for the applicant to provide that their installation construction will be during the summer and fall to allegedly avoid NARW migration, it must also be said that it is also the most pleasant weather to be on ships doing construction. However, by concentrating harmful activities in the summer through fall, these are seasons when many other species of mammals, including dolphins and whales, will be in their prime utilization of the region for foraging, birthing, nursing young, migrating and other essential survival behaviors causing even greater impact to these species. Aggravating impacts on these species must not occur.

Furthermore, COA objects to the conclusion that the activities covered by the proposed IHA will result only in ***Level B*** harassment of NARWs, as opposed to ***Level A*** harm—i.e., physical injury or death. Indeed, the Applicant requests Level A takes for Fin (21), Minke (9), Humpback (4), and Sei whales (1). Where is the evidence that shows other whales will experience Level A injury and harassment, but the NARW will not? Of all species under consideration in this IHA, the NARW population is the most susceptible to even the slightest harm. COA requests NMFS to reject/deny the Applicant's IHA because the application fails to account for Level A takes that (1) are reasonably likely to occur to NARW due to the activities in question, and (2) will have more than a mere negligible impact on NARWs.

---

[11] Atlantic Shores Offshore Wind, "Application for Marine Mammal Protection Act (MMPA) Rulemaking and Letter of Authorization" as submitted to Permits and Conservation Division, Office of Protected Services, NOAA Fisheries, September 2022, Page iii.

[12] National Oceanic & Atmospheric Administration, Fisheries, "Extension of Right Whale Slow Zone Southeast of Atlantic City, NJ." As seen, 11/15, 2022: https://content.govdelivery.com/accounts/USNOAAFISHERIES/bulletins/2fef565.

[13] *See* https://whalemap.org; https://portal.midatlanticocean.org.

[14] National Oceanic & Atmospheric Administration, Fisheries, "North Atlantic Right Whale," as seen 11/15/2022, https://www.fisheries.noaa.gov/species/north-atlantic-right-whale.

In this respect, COA first notes that vessel strikes pose one of the largest threats to NARWs. According to NOAA, "vessels of nearly any size can injure or kill a right whale[15]." Yet, the only vessel strike avoidance measures included in the proposed IHA are minimum separation distances of 500 meters and restrict vessel speeds (10-knots) when NARWs are observed near vessels.[16] These are the same minimum standards required of all vessels passing through special areas designated by NMFS for the protection of NARWs,[17] and they do not account for the unique harm posed to NARWs by construction activities for offshore wind energy development as compared to other activities. Additionally, all of these vessel strike avoidance measures are clearly directed toward the vessels engaged in construction activities for the Applicant, yet the application never accounts for collisions with other vessels caused by NARWs being displaced from the waters covered by the IHA. Further, for accountability and fairness, how and who will determine which vessel struck a NARW or other species if that should happen? Especially given the threat posed to NARWs as a species by even one instance of a vessel collision, NMFS should reject/deny the requested IHA.

In addition, underwater noise pollution is a significant threat to the survival of whales. A growing source of noise pollution that interferes with NARWs' most vital social functions is offshore wind-related activities. More specifically, low frequency noise from large ships involved in offshore wind-related activities overlaps with the acoustic signals used by right whales. These large whales rely on sound to breed, navigate coastlines, and find food.[18] Right whales communicate with one another by making calls, which can cover distances of more than 20 miles[19]. The calls let whales stay in touch, share information about food, help mates find each other, and keep groups together while traveling. COA objects to NMFS' determination that the underwater noise generated by offshore wind energy project construction activities will result only in Level B harassment of NARWs.

Regarding humpback whale research,

> *Whales also emit low frequency sound waves. These waves are like hills that are wide spread apart. These sound waves can travel very far in water without losing energy. Researchers believe that some of these low frequency sounds can travel more than 10,000 miles in some levels of the ocean.*[20]

However, rising levels of ocean noise are interfering with whales' ability to communicate. Anthropogenic noise interferes with their ability to eat, mate, and navigate; therefore, it is essential to their survival that these sounds travel the ocean undisturbed.[21] North Atlantic right

---

[15] *See id.*
[16] 87 FR 4219.
[17] *See id*.
[18] *See* Richard Schiffman, *How Ocean Noise Pollution Wreaks Havoc on Marine Life*, YALE ENV'T 360 (Mar. 31, 2016), http://e360.yale.edu/features/how_ocean_noise_pollution_wreaks_havoc_on_marine_life.
[19] Woods Hole Oceanographic Institution, "Right Whales," as seen 11/15/2022, https://www.whoi.edu/know-your-ocean/ocean-topics/ocean-life/marine-mammals/right-whales/.
[20] Journey North, "Humpback Whales: The Humpback Song." As seen 11/15/2022, https://journeynorth.org/tm/hwhale/SingingHumpback.html#:~:text=Whales%20also%20emit%20low%20frequency,some%20levels%20of%20the%20ocean.
[21] National Oceanic & Atmospheric Administration, Fisheries, "North Atlantic Right Whale," as seen 11/15/2022, https://www.fisheries.noaa.gov/species/north-atlantic-right-whale.

whales have been observed increasing their call amplitude with the rise of background noise, and noise pollution has been correlated with an increase in stress-related fecal hormone metabolites.[22] Considered together, the cumulative amount of underwater noise allowed by the IHA request is not just an annoyance to NARWs and other whales, but also has the potential to injure species' stock. Despite this, the IHA application does not assess for Level A takes with regard to underwater noise. The Applicant states,

> *BOEM has concluded that injury to marine mammals (i.e., Level A harassment) is not expected as sound diminishes rapidly from the equipment (BOEM, 2018). Therefore, Level A take calculations have not been performed and Level A take from HRG surveys has not been requested for any marine mammal species.*[23]

BOEM is **not** the federal agency with the jurisdiction and legal requirement to protect marine mammals. That agency's opinion is not relevant, although it does call into question how and why BOEM is making such determinations, and the value provided to such statements.

2. *Excessive Takings of Other Marine Mammal Species, including Endangered & Threatened*

In addition to the objections to the Applicant's IHA regarding impacts to the critically endangered North Atlantic right whale, it is also troubling to see the Applicant request both Level A and Level B harassments of a wide variety of other marine mammals. Many of these other species are classified as endangered and threatened, including the Humpback[24], Fin, and Sei whales. The Applicant is currently applying for authorization of Level A takes for nine different species, and Level B takes for 17 species. For instance, the total number of Level A takes of endangered Fin whales is an astonishing 21 individuals, and when combined with Level B takes, the number rises to 86 Fin whales. For the endangered Sei whale, the IHA proposes to take 22 whales, including one by Level A. For the endangered Humpback whales, the IHA proposes to take 4 by Level A harassment, and 25 by Level B. Clean Ocean Action finds the variety of species and total number of individual Level A and Level B takes proposed by Atlantic Shores unsupportable. The IHA request is also based on the lack of relevant baseline information about how these species use the lease site. How is it possible for there to be a calculation of impact when there is limited knowledge about the species in the area?

Further, we draw attention to the 10,528 Level B takes of one species, the bottlenose dolphin (coastal and offshore), that the Applicant is seeking to harm. These takes would occur immediately following the authorized taking of roughly thousands of bottlenose dolphins by the Applicant for previous IHAs.[25] Bottlenose dolphin are highly social, and arguably the most

---

[22] *North Atlantic Right Whale 5-Year Review,* NOAA FISHERIES SERV. NE. REG'L OFFICE 11-12 (Aug. 2012), http://www.nmfs.noaa.gov/pr/pdfs/species/narightwhale_5yearreview.pdf

[23] Atlantic Shores Offshore Wind, "Application for Marine Mammal Protection Act (MMPA) Rulemaking and Letter of Authorization" as submitted to Permits and Conservation Division, Office of Protected Services, NOAA Fisheries, September 2022, page iii-iv.

[24] Conserve Wildlife Foundation of New Jersey, "New Jersey Endangered and Threatened Species Field Guide: Humpback Whale." As seen 11/15/2022, http://www.conservewildlifenj.org/species/fieldguide/view/Megaptera%20novaeangliae/

[25] 86 FR 21292 (Apr. 22, 2021); 85 FR 21207 (Apr. 16, 2020).

recognized and beloved small cetacean.[26] In addition to their inherent value to the American public, the dolphins are an increasingly important driver of economic growth for tourism and related industries.[27] The cumulative impact of harassing nearly thousands of bottlenose dolphin may be considerable and irreversible, but these impacts are not considered in the IHA as currently proposed. Likewise, missing from the proposed IHA is consideration of how the identified MMPA-protected species will be affected by the ecosystem changes that will necessarily occur when nearly thousands of marine mammals are harassed or taken within a short timeframe, especially given the unique importance of bottlenose dolphins for keeping their ecosystem in balance.[28] How can NMFS justify the taking of over 29% of coastal bottlenose dolphins, or any animal for that matter, for construction of one private company's two offshore wind projects? These shortcomings merit the rejection of the Applicant's IHA request.

Also, as stated previously, the Applicant's proposal to limit construction during summer and fall to "protect" NARW will proportionally concentrate adverse impacts affecting species that primarily utilize these areas during that time, including dolphins and whales.

Furthermore, COA strongly encourages NMFS to reject the application due to deficiencies in its analysis concerning the proposed activities' effects on harbor seals. Frequently spotted along both the East and West Coasts of the U.S., harbor seals are known for resting on floating ice with their head and rear flippers elevated in a "banana-like" position, leading to their popularity with excited winter beach-goers.[29] Besides their wide recognition among the American public, harbor seals also play a major role in maintaining balance in marine food webs as well.[30] Despite the unique importance of this species, however, COA maintains there is not sufficient baseline information about how harbor seals use the waters at lease site OCS-A 0499 to conclude that the activities covered by the proposed IHA will have a negligible impact on harbor seals. More specifically, a COA employee attended a virtual "Science Saturday" event in early 2022 at which a representative of the New Jersey Department of Environmental Protection ("NJDEP") indicated that, to date, no one has tracked harbor seals to understand the species' pre-construction use of offshore wind energy lease areas off the NJ coast.[31] This admission strongly suggests that decisionmakers do not yet have sufficient information about the role of these lease

---

[26] *Common Bottlenose Dolphin*, MARINE MAMMAL CENTER (visited Feb. 28, 2022), https://www.marinemammalcenter.org/animal-care/learn-about-marine-mammals/cetaceans/common-bottlenose-dolphin.

[27] *The Economic of Marine Mammals*, MARINE MAMMAL COMMISSION (visited Feb. 28, 2022), https://www.mmc.gov/priority-topics/value-marine-mammals/.

[28] *Bottlenose Dolphins: Our Smart, Sociable Friends of the Sea*, WORLD WILDLIFE FUND UK (visited Feb. 28, 2022), https://www.wwf.org.uk/learn/wildlife/dolphins#:~:text=Dolphins%20play%20an%20important%20role,have%20as%20much%20to%20eat.

[29] *Harbor Seal*, NATL. MARINE FISHERIES SERV. (visited Feb. 28, 2022), https://www.fisheries.noaa.gov/species/harbor-seal.

[30] *Seals*, INTL. FUND FOR ANIMAL WELFARE (visited Feb. 22, 2022), https://www.ifaw.org/animals/seals#:~:text=As%20one%20of%20the%20keystone,%2C%20polar%20bears%2C%20and%20sharks.

[31] "Science Saturday: Offshore Wind," LONG BEACH ISLAND FOUNDATION OF ARTS AND SCIENCES (Feb. 19, 2022). Specifically, the NJDEP representative identified the tracking of harbor seals off the NJ coast to understand their use of lease areas prior to the construction of offshore wind turbines as a project concept that NJDEP is currently considering.

areas in harbor seals' life-cycles to substantiate the numbers of harassments expected to occur by the proposed IHA. With this in mind, the Applicant requests the taking of 831 harbor seals by Level A and B takes. NMFS should therefore reject the requested IHA.

II. Other Issues of Importance, including Lack of Fairness, Transparency, and Accountability

This list of COA concerns is not exhaustive; as the MMPA recognizes, every marine mammal is important, and the effects of the proposed activities on other species—including those that are also actively experiencing Unusual Mortality Events, such as the North Atlantic right whale and humpback whale—should encourage NMFS to demand more baseline data and severely restrict the Applicant's authorized takes for the activities in question. COA consequently urges NMFS to reject/deny another IHA for Atlantic Shores.

A serious issue of concern is a lack of accountability. Again, as referenced above,

> *By 2030 the Northeast large marine ecosystem will be occupied by over 2.4 million acres of leases, 3,400 turbines, and 10,000 miles of submarine cables; and an additional 5.7 million acres is also under consideration for further development.*[32]

Never has an ecosystem been under such massive industrial development pressure and impact over a span of less than decade. Given this unimaginable and unprecedented scope and scale of industrial offshore wind development in the Northeast region, and off the New Jersey and New York coasts in particular, NMFS must provide clarity and due process *now* for the determination of accountability. At what point will there be too many accumulated IHA Level A and Level B harassments? What are the guardrails to determine how may IHA takes will be too many? How will NMFS distinguish between impacts, such as those from the wind industry as compared to those from other shipping traffic, especially as wind facilities are built-out and marine life and ships are concentrated into more narrow corridors? Who will be responsible and how will the accountability be managed? How will the number of IHA takes be lowered over time to address the additional, cumulative stress to marine life? Or will it be?

On another matter, how will population dynamics be measured as species populations decline from stress or injury from offshore wind development? Or food scarcity as migratory fish populations move or as fish structure changes? Or will the agencies simply place blame on "climate change" as a catch-all to lower populations of marine mammals? How many marine mammals can be harassed and injured before the populations, and associated ecosystems, collapse, all for the current unfounded benefits of the new offshore wind energy industry. How many takes, cumulatively, are too many? The current process by which IHAs are evaluated must include cumulative impacts to populations from all IHA applications.

These questions and issues, among others, must be addressed at the outset to ensure transparency and accountability for the impacts to the living marine ecosystem from this wholesale, rapid industrial development of the ocean.

[32] National Marine Fisheries Service, EBM/EBFM Seminar Series Announcement, September 2022, personal communication.

Of further note, COA protests the double standard that has developed for the offshore wind industry when it comes to protecting marine mammals, especially the NARW. COA acknowledges the importance of reducing other common harms to NARWs and other marine mammals, such as entanglements and vessel strikes, but these efforts to help the species will be of limited benefit if they coincide with an increased tolerance for other activities that torment and annoy these invaluable creatures. The noise, electromagnetic fields, and drilling associated with offshore wind turbines and the site characterization activities that precede them, as well as the construction, operation, and decommissioning activities that are forthcoming must be treated as the serious and amplifying threats to the NARW, and other marine mammals, that they are—no different than entanglements or vessel strikes. NMFS should seize the opportunity to set a strong precedent for protecting NARWs by denying Atlantic Shores' proposed IHA.

III. Conclusion

In sum, COA urges the NMFS to reject/deny the proposed IHA. It is clear that the Applicant's activities would cause an unacceptable number of Level A and Level B harassments of extremely at-risk and endangered North Atlantic right whales, Humpback, Fin and Sei whales, as well as many other marine mammal species. The activities in question are reasonably likely or expected to adversely affect NARWs—both individuals and the stock as a whole—through effects on the species' annual rates of recruitment and survival; this impact cannot reasonably be considered to be merely minimal or negligible. Additionally, COA asserts that the activities covered by the IHA are reasonably likely to result in Level A harms to NARWs that are not covered by the authorization's terms, thus rendering approval of the IHA an inappropriate course of action for NMFS. It is imperative that NMFS engage in all means possible to avoid harm to all of the uniquely significant species protected by the MMPA, especially the North Atlantic right whale, and protect their precious ecosystem.

In addition, the cumulative IHA requests and authorizations for offshore wind projects in the same region, as well as other uses, must be considered when reviewing IHA applications. The total IHA takes for all species affected must be considered alongside takes that NMFS has authorized for other wind activities including for site characterization, assessment, and construction activities (and later, operation and decommissioning activities) that are simultaneously occurring in the region and migration areas.

For the foregoing reasons, COA asks that NMFS deny the Applicant's proposed IHA. Should you have any questions or would like to further discuss the concerns that COA has identified above, please feel free to contact us.

Respectfully submitted,

Cindy Zipf
Executive Director

Kari Martin
Advocacy Campaign Manager