

## FAB Issue: Vessel Safety – additional vessel operators

In addition to the effects on the resources and fishing behavior, the wind farms proposed here introduce significant safety concerns to the fishing industry. When fishers harvest or transit near or within the proposed wind farm, the risks increase dramatically due to several reasons including:

- radar interference
- lack of emergency support access
- allision
- increased collision due to vessel traffic concentrations
- gear fouling in turbine and cable infrastructure

One of the primary reasons for accidents within the New England fisheries are related to crew under-capacity, sometimes due to regulations, as increased fatigue and decreased training increases the chances of accidents to occur.<sup>1,2,3</sup> Additionally, restricted transit through closed or limited-access areas compromise safety; particularly when transit restrictions require lengthened trips in hazardous weather.<sup>4</sup>

The safety risks associated with radar interference from wind turbine generators (WTGs) are significant, and will affect every component of fisheries exposure. Both commercial and recreational fishers that fish in offshore waters of New England rely heavily on radar to navigate at night, in fog and rain, and to monitor nearby vessel traffic, fishing gear, and other targets.<sup>5</sup> WTGs present multiple types of interference with radar, including radar clutter, radar saturation, and radar shadowing, and while the Radar Clutter Assessment at the Block Island Wind Farm showed that clutter could be reduced by gain control adjustments, they also showed that these adjustments result in the loss of small targets such as small boats or fixed-gear markers.<sup>6</sup> A 2022 report from the National Academies of Science concluded unequivocally that wind turbine interference decreases the effectiveness of radar of all vessels sizes, and this problem will be exacerbated with the expected offshore wind farms across the US OCS.<sup>7</sup> Wind turbines negatively affect both magnetron-based and doppler-based radar, and the NAS report states that “*no standard approach to active radar deployment in a WTG environment is available.*”<sup>8,9</sup> Despite

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<sup>1</sup> Kaplan, I.M. and Kite-Powell, H.L., 2000. Safety at sea and fisheries management:: fishermen's attitudes and the need for co-management. *Marine Policy*, 24(6), pp.493-497.

<sup>2</sup>Dyer, M.G., 2000. Hazard and risk in the New England fishing fleet. *Marine technology and SNAME news*, 37(01), pp.30-49.

<sup>3</sup> Fenton, M., Connelly, K. and Christel, D., 2022. Risk Assessment of the Northeast Limited Access Multispecies (Groundfish) Fishery. NOAA Technical Memorandum NMFS-NE-276

<sup>4</sup> Ibid

<sup>5</sup> Hogan, F. et al. 2023. Fisheries and Offshore Wind Interactions: Synthesis of Science. NOAA Technical Memorandum NMFS-NE-291. <https://doi.org/10.25923/tcjt-3a69>.

<sup>6</sup> Ibid

<sup>7</sup> National Academies of Sciences, Engineering, and Medicine, 2022. Wind Turbine Generator Impacts to Marine Vessel Radar. <https://nap.nationalacademies.org/catalog/26430/wind-turbine-generator-impacts-to-marine-vessel-radar>

<sup>8</sup> Ibid

<sup>9</sup> M. Lapp – CRMC Consistency Review for Revolution Wind – Comments 5.9.2023

attempts to identify solutions to this problem, none have yet been successful.<sup>10</sup> Therefore it is essential to understand that there are no *equipment updates and training* available to resolve these radar-related safety issues.<sup>11</sup> Radar interference from wind turbines will not only impact fishers' ability to navigate safely, but will also severely limit USCG search and rescue capabilities by both vessel and aircraft. According to the National Academy of Sciences 2022 study, "*WTG interaction with MVRs at the scale of the proposed U.S. deployment will lead to unforeseen complications due to heightened effects of propagation, multipath, shadowing, and degraded Automatic Radar Plotting Aid performance. Maritime search and rescue (SAR) assets rely on MVR to search for smaller boats as their primary targets in the conduct of ordinary SAR operations. A loss of contact with smaller vessels due to the various forms of MVR interference could complicate MTS operations, and is therefore particularly consequential when conducting maritime surface SAR operations in and adjacent to an offshore wind farm.*"<sup>12</sup>

It is important to emphasize the fact that there are no current solutions to the problems with radar interference from wind farms, hence no quick solutions that can be resolved with a *Navigation and Training* voucher for \$1K-3K per vessel.<sup>13</sup> In the UK, "wind turbine proof" air defense radar systems were used to mitigate interference from offshore wind farms; however, after these technologies were tested, the UK Ministry of Defence informed developers that the trials determined interference still existed.<sup>14</sup> In February 2023 the UK Ministry of Defence announced over £14million of funding for innovative research seeking "*...innovative technologies that have the potential to mitigate the effect of windfarms on UK Air Defence to enable the long-term co-existence of offshore wind installations and Air Defence radar.*"<sup>15</sup> This call for research and innovation makes it increasingly clear that the problem of radar interference from wind farms has not yet been solved, and therefore remains a significant hazard to any vessel in or near the Sunrise and adjacent wind farms.

Radar concerns are one component that exacerbates the myriad of safety issues that confront fishers with the presence of wind farms. Fishing in and around wind farms is a significant safety hazard that, when combined with the added vessel traffic associated with wind farm construction and maintenance, will prevent fishers from accessing their traditional fishing grounds. In the UK, many fishers specifically have chosen to avoid their previous fishing grounds inside wind farms altogether, due to safety concerns related to snagging their gear on cables and other related obstacles, and risks of allision with turbines should there be vessel breakdowns or other problems while in the wind farm.<sup>16</sup> Rhode Island fishers have said that it is unlikely they will be able to fish inside an operational windfarm due to the potential

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<sup>10</sup> Ibid

<sup>11</sup> SRW Compensatory Mitigation Offer. Email sent to CRMC from J. Christensen 03 Aug 2023. The offer includes \$333,333 for Navigation and Training on a voucher basis

<sup>12</sup> National Academies of Sciences, 2022. p. 5.

<sup>13</sup> There are approximately 300 commercial fishing vessels in RI, about 110 annually fish inside Sunrise. Calculation based on SRW compensation offer of \$333,333.

<sup>14</sup> Gilman, 2020. Offshore wind turbine radar interference mitigation (WTRIM) webinar. 20 April 2020. Accessed at: <https://www.energy.gov/sites/prod/files/2020/04/f74/offshore-wind-turbine-radar-interference-mitigation-webinar-4-20-2020.pdf>

<sup>15</sup> Over £14 million available for Windfarm Mitigation for UK Air Defence: Phase 3. Accessed at: <https://www.gov.uk/government/news/over-14-million-available-for-windfarm-mitigation-for-uk-air-defence-phase-3>

<sup>16</sup> Gray, M., Stromberg, P-L., Rodmell, D. 2016. 'Changes to fishing practices around the UK as a result of the development of offshore windfarms – Phase 1 (Revised).' The Crown Estate, 121 pages. ISBN: 978-1-906410-64-3

for overcrowding,<sup>17</sup> and FAB members representing both fixed and mobile gear sectors have stated that they will not fish inside the operational wind farms due to similar safety concerns.<sup>18</sup> The cumulative footprint of Sunrise and adjacent wind farms only compounds these issues and reduces the options for alternative fishing grounds.

The MARIPARS study concluded that the turbine layout in the RI-MA WEA be in a uniform grid pattern, based on three assumptions of safe navigation analysis: (1) no current laws prevent vessels from transiting through fishing areas; (2) mariners are required to follow COLREGS or “rules of the road”; and (3) mariners will likely have to adjust their watch keeping requirements and level of vigilance when navigating within the WEA.<sup>19, 20</sup> The National Academies of Science (2022) report on radar interference from wind farms provides methods for mitigating degraded marine vessel radar (MVR); this first of which is *additional watchstanders*.<sup>21</sup> The 1972 COLREGS requires all vessels to, at all times, “*maintain a proper look-out by sight and hearing as well as by all available means appropriate in the prevailing circumstances and conditions*”<sup>22, 23</sup> There are regulations regarding the hours of rest requirements for seafarers with designated safety, security and pollution prevention duties, which includes watchstanders (aka: watchkeepers) and lookouts. To operate a vessel as a watchkeeper in the U.S., one must complete an approved qualification for Watchkeeper Deck certification, meet minimum service requirements, and possess certain Standards of Training, Certification, and Watchkeeping for Seafarers (STCW) certificates.<sup>24</sup> Additional mitigation alternatives listed in the NAS report include:

- AIS capabilities, which are only effective if all vessels transmit AIS, and there are no safeguards to ensure accuracy and authenticity of AIS data, therefore it is imperative for mariners to use caution when relying on AIS.<sup>25</sup>
- Electronic Chart Systems and Electronic Chart Display and Information Systems can provide assistance with voyage planning and situational awareness as it pertains to stationary features, but does not apply to non-stationary objects and the only vessel traffic detected would be those vessels with AIS, then the same cautions for AIS apply to these technologies. “*It is therefore imprudent for the officer of the watch to depend solely on the information on the ECDIS—an aid to navigation that does not replace the human quotient, which brings in the skill and expertise with experience that an ECDIS cannot provide.*”<sup>26, 27</sup>

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<sup>17</sup> RIDEM, 2016. Rhode Island Stakeholder Concerns Regarding the New York Wind Energy Area. July 22, 2016.

<sup>18</sup> RI FAB, pers. comm.

<sup>19</sup> USCG, 2020. The areas offshore of Massachusetts and Rhode Island port access route study. United States Coast Guard. USCG-2019-0131. Accessed at: <https://vineyardwind.app.box.com/s/nasn28vt1hcrgrndmfqsv0n9drq4k83x>

<sup>20</sup> Hogan et al. 2023. Fisheries and Offshore Windfarm Interactions: Synthesis of Science. NMFS-NE-291

<sup>21</sup> National Academies of Sciences, 2022. p. 52.

<sup>22</sup> Convention on the International Regulations for Preventing Collisions at Sea, 1972. Accessed at: <https://www.imo.org/en/About/Conventions/Pages/COLREG.aspx>

<sup>23</sup> National Academies of Sciences, 2022.

<sup>24</sup> STCW. <https://www.dco.uscg.mil/nmc/stcw/>

<sup>25</sup> National Academies of Sciences, 2022. Page 53

<sup>26</sup> Ibid

<sup>27</sup> Bhattacharjee, S. 2021. What Is Electronic Chart Display and Information System (ECDIS)? (In Marine Navigation). Marine Insight, August 31. Accessed at: <https://www.marineinsight.com/marine-navigation/what-is-electronic-chart-displayand-information-system-ecdis/>

Therefore, it is essential that, at a minimum, Rhode Island vessels that fish within or transit through the Sunrise Wind area hire additional crew that are educated and certified in vessel navigation. An additional entry-level deckhand will not suffice, as they are not suited to operate vessels through navigational challenges that the wind farms present. The additional vessel navigator would also contribute to prevention of accidents or breakdowns, as their presence on the vessel whether at-sea or in-port will provide additional engine and general vessel maintenance. In order to ensure retainment of qualified individuals, these positions should be at least half-time equivalent. According to the NOAA Fisheries permit database, from 2014-2019, there are an average of 263 fishing vessels with federal permits whose primary port is in Rhode Island, 233 of which have their home port in Rhode Island; we estimate the RI-based fleet to be the average of the two, which equated to 248 vessels.<sup>28</sup> NOAA summaries of fishing activity within the Sunrise WLA suggest that 146 commercial fishing vessels from Rhode Island that could be displaced by the Sunrise Wind Farm, and about 68 are “expected” to operate within the Sunrise WLA; based on annual average from 2008-2019.<sup>29</sup>

According to Bureau of Labor Statistics (BLS), the average annual pay in 2022 for a Captain, Mate, or Pilot in Rhode Island was \$92,970.<sup>30</sup> This equates to an approximate annual cost of \$13,573,620 for the 146 vessels that could be displaced, or \$258,299,944 over 30 years (with a 3% discount rate). If the developer expects that the fishing fleet will continue to fish within the Sunrise wind farm during the 30-year operational period, each vessel should be provided the funds from the developer to hire and retain adequate personnel to navigate safely through the wind farm. On the low end, if we make the same calculation for just the 68 vessels that are “expected” to operate within the Sunrise WLA, then the annual cost would equate to \$6,321,960, or \$120,304,084 over the 30-year operational period (with a 3% discount rate).

We understand that there are crew size limits incorporated into management schemes for multiple reasons. Crew limits can prevent overcrowding on vessels, hence reduce accidents and injuries; they can help to prevent overfishing, as well as reduce costs<sup>31</sup>. However, this is why we propose the added personnel specifically be onboard for navigation and vessel operation; essentially remain on hand to relieve the primary vessel operator as needed, and to assist in ensuring the vessel is operating well. Any expected hurdles to this plan presented by NOAA fisheries regulations due to crew size limits can be addressed with NOAA Fisheries during the 5-year ‘adjustment’ period post-construction.

Additionally, we understand that not 100% of these vessels’ time is spent operating in or transiting through the Sunrise WLA; however, in order to acquire and retain such skilled labor it is necessary that the added vessel operator be hired-on as at least half-time position to ensure stable employment,

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<sup>28</sup> NMFS Northeast Region permit data. Data from 2014-2019; average calculated between 263 RI-primary and 233 RI-home. Annual databases accessed at:

<https://www.greateratlantic.fisheries.noaa.gov/public/public/web/NEROINET/aps/permits/data/index.html>

<sup>29</sup> NMFS 2023. Descriptions of Selected Fishery Landings and Estimates of Vessel Revenue from Areas: A Planning-level Assessment - Sunrise Wind OCS-A 0487. Accessed at:

[https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/WIND/WIND\\_AREA\\_REPORTS/com/OCS\\_A\\_0487\\_Sunrise\\_Wind\\_com.html#Species\\_Dependence](https://www.greateratlantic.fisheries.noaa.gov/ro/fso/reports/WIND/WIND_AREA_REPORTS/com/OCS_A_0487_Sunrise_Wind_com.html#Species_Dependence)

<sup>30</sup> Bureau of Labor Statistics. <https://www.bls.gov/oes/current/oes535021.htm>

<sup>31</sup> <https://www.fisheries.noaa.gov/bulletin/2022-fishing-year-limited-access-allocations-atlantic-sea-scallop-fishery>

otherwise they will pursue other work and not be available. Hiring an extra trained vessel operator on an as-needed basis would not be feasible.

Training existing crew without replacement is not an acceptable alternative to this, unless that crew member becomes officially certified in navigational expertise, and another crew member is hired to relieve the new captain of their previous duties on deck. Finally, there is not a surplus of certified vessel operators in Rhode Island, or in the U.S. in general, therefore to meet the needs of the Rhode Island fleet to work within the wind farms, a vocational program to train and credential additional vessel operators would be required.<sup>32</sup>

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<sup>32</sup> National Academies of Sciences, 2022. Page 53