

CRMC File No. 2021-06-029

RI CRMC Federal Consistency Review of the Revolution Wind Project

Staff Decision Recommendation for Concurrence

April 25, 2023

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1 Project Description

The Rhode Island Coastal Resources Management Council (CRMC) has completed its Coastal Zone Management Act (CZMA) federal consistency review of Revolution Wind, LLC's (Revolution Wind) proposed Revolution Wind Farm (RWF) offshore wind renewable energy project within Bureau of Ocean Energy Management (BOEM) Lease Area OCS-A 0486.¹ The RWF Construction and Operation Plan (COP) project design envelope (PDE) is based on an operating capacity presented as ranging between 704 megawatts (MW) and 880MW using 8-12 MW wind turbine generators (WTG). Currently, the RWF project purchase power agreement's (PPAs) total approximately 704 megawatts, with approximately 400 MW of energy generation for Rhode Island and the remaining approximately 304 MW for Connecticut. Rhode Island and Connecticut share the ISO New England transmission grid, allowing this Project to meet PPAs for both states. Additionally, the RWF will be utilizing an 11 MW WTG which would necessitate a minimum 65 WTG positions to meet PPA obligations.² The RWF lease area is approximately 83,798 acres in size and is located in-part on Cox Ledge, an area dominated by complex glacial moraine habitat which shares the same characteristics, values, and resources as areas designated Areas of Particular Concern (APC) in State Waters which are essential to Rhode Island coastal resources and users.³ Pursuant to 15 C.F.R. § 930.62(d), the CRMC Staff is recommending a **concurrence** in this matter based on the mutually agreed upon conditions detailed herein.⁴

2 Federal Consistency

The proposed RWF Project is subject to CRMC review authority pursuant to the federal Coastal Zone Management Act (CZMA), 16 USC § 1456(c)(3)(A) and the CZMA's implementing regulations at 15 CFR Part 930 Subpart D - Consistency for Activities Requiring a Federal License or Permit and Subpart E - Consistency for Outer Continental Shelf (OCS)

¹ On March 23, 2020, BOEM approved an application to assign a portion of commercial lease OCS-A 0486 from Deepwater Wind New England, LLC to Deepwater Wind South Fork, LLC, which resulted in segregation of the lease a new lease number OCS-A 0517. The remaining portion of the OCS-A 0486 area was assigned to Deepwater Wind Revolution I, LLC on March 24, 2020. Deepwater Wind Revolution I, LLC subsequently changed their name to Revolution Wind, LLC.

² Revolution Wind has entered into a Turbine Supply Agreement with Siemens Gamesa for their SGRE 11MW DD200 WTG. The design and dimensions of this WTG model fall within the parameters of the PDE for WTGs.

³ See *infra* Figure 2 and Figure 3 pp. 16 to 17.

⁴ See 15 C.F.R. § 930.62(d) stating the State agency and the applicant should attempt to agree to conditions, which, if met by the applicant, would permit State agency concurrence; see also 15 C.F.R. § 930.4.

Exploration, Development and Production Activities.⁵ In this matter, Revolution Wind is seeking a federal license/permit from BOEM, which is the lead federal agency for renewable energy projects on the OCS. CRMC’s review authority extends into federal waters because the RWF is a listed activity within the Ocean Special Area Management Plan (Ocean SAMP)⁶ and is located within Rhode Island’s 2011 Geographic Location Description (GLD)⁷ area as approved by the National Oceanic and Atmospheric Administration (NOAA) Office for Coastal Management (OCM). Accordingly, pursuant to 15 C.F.R. Part 930 subpart E, the CRMC as the State’s authorized coastal zone management agency must make a determination and issue a written decision as to whether the proposed RWF project is consistent with Rhode Island’s federally approved enforceable policies⁸ contained in the CRMC’s Ocean SAMP codified in the Rhode Island Code of Regulations at 650-RICR-20-05-11. The CRMC’s concurrence with Revolution Wind’s consistency certification for the RWF Project is required before BOEM may approve, disapprove, or approve with conditions the RWF COP pursuant to 30 C.F.R. § 585.682(f).

⁵ See 15 C.F.R. Part 930 Subpart D – Consistency for Activities Requiring a Federal License or Permit; *see also* 15 C.F.R Part 930 Subpart E – Consistency for Outer Continental Shelf (OCS) Exploration, Development and Production Activities.

⁶ See 650-RICR-20-05-11.

⁷ See 15 C.F.R. § 930.53(a)(1). GLDs encompass areas outside of the coastal zone where coastal effects from federal license or permit activities are reasonably foreseeable.

⁸ See 15 C.F.R. § 930.11(h) defining “enforceable policy” as “State policies which are legally binding through constitutional provisions, laws, regulations land use plans, ordinances, or judicial or administrative decisions, by which a State exerts control over private and public land and water uses and natural resources in the coastal zone.”



Figure 1: Rhode Island’s 2011 GLD area is outlined in red and the 2018 GLD is outlined in yellow. The RWF is located within the 2011 GLD. The red grid patterns represent the nine offshore wind lease areas in federal waters. Yellow shaded regions are areas of Ocean SAMP mapped glacial moraine.

The CRMC’s six-month federal consistency review period commenced on August 6, 2021,⁹ upon Revolution Wind meeting its necessary data and information requirement with the CRMC pursuant to 15 C.F.R. §§ 930.57-930.58 and 930.76. Subsequently, on October 21, 2021, the CRMC issued its three-month notice¹⁰, as required by 15 C.F.R. § 930.78(a), to Revolution Wind and BOEM describing the status of the CRMC’s ongoing federal consistency review. The three-month letter specified the issues that Revolution Wind needed to address in order to be consistent with the CRMC’s enforceable policies and requested additional information necessary for the CRMC’s review. The specific information requested included a detailed graphic(s) that clearly delineates glacial moraine as they relate to WTG positions, inter-array cables (IACs),

⁹ See Appendix 2 – CRMC CZMA Review Commencement Letter.

¹⁰ See Appendix 3 – CRMC Three-Month CZMA Review Status Letter.

offshore substations (OSS), and the export cable corridor; an alternative project layout that makes all feasible efforts to avoid damage to glacial moraine resources and values; detailed graphics delineating CRMC offshore dive sites as identified in Ocean SAMP § 11.10.2(C)(2); an economic impact analysis of the project on commercial and recreational fisheries for Rhode Island-based vessels harvesting/fishing within the RWF lease area and along the export cable corridor that takes into account construction, operation, and decommissioning phases of the RWF project; and a Fisheries Research and Monitoring Plan. Over the course of seventeen months, the CRMC received the necessary data and information to conduct its federal consistency review in accordance with 15 C.F.R. Part 930.

CRMC and Revolution Wind mutually agreed to **five (5)** separate stay agreements over the course of CRMC's review as follows:

- **1st** stay agreement began on October 29, 2021, with a CRMC decision date of December 21, 2021.
- **2nd** stay agreement began on November 17, 2022, with a CRMC decision date of February 24, 2023.
- **3rd** stay agreement began on February 7, 2023, with a CRMC decision date of March 31, 2023.
- **4th** stay agreement began on March 2, 2023, with a CRMC decision date of April 28, 2023.
- **5th** stay agreement began on March 30, 2023, with a CRMC decision date May 12, 2023.

Accordingly, the CRMC federal consistency decision is due no later than **May 12, 2023**, pursuant to 15 C.F.R. §§ 930.77 and 930.78.

To inform the federal consistency review, CRMC reviewed the RWF COP, BOEM Draft Environmental Impact Statement (DEIS) announced on August 29, 2022,¹¹ and developed pursuant to the National Environmental Policy Act and the CZMA, the RWF federal consistency certification, and additional supplemental information provided by Revolution Wind throughout

¹¹ See Appendix 5 – CRMC Revolution Wind DEIS Comments. CRMC subsequently submitted comments on October 17, 2022, to BOEM regarding the DEIS during the public comment period.

the review period. In addition, the CRMC also considered information provided by the CRMC's Fishermen's Advisory Board (FAB) and Habitat Advisory Board (HAB).¹² In furtherance of CRMC's role as a designated cooperating agency, CRMC will continue to review and comment on future BOEM submissions regarding the RWF project including the Final Environmental Impact Statement, scheduled for release on or about July 7, 2023.

3 Concurrence with Conditions

Based on the Staff's review, the conditions below will permit the CRMC to issue a concurrence in this matter because the conditions are mutually agreed to and provide assurances that the RWF Project is consistent with Ocean SAMP enforceable policies. State agencies and applicants are encouraged "to develop conditions that, if agreed to during the State agency's consistency review period...would allow the State agency to concur with [activities requiring a federal permit or license]."¹³ Conditions are premised on whether a consistency certification submitted by an applicant to the State agency adequately demonstrates how a proposed project will be consistent with a state's enforceable policies.¹⁴ Revolution Wind filed a consistency certification with CRMC on June 7, 2021, stating "[t]he Project complies with the enforceable policies of the Rhode Island approved management program and will be conducted in a manner consistent with such program."¹⁵ The consistency certification includes a response for each Ocean SAMP enforceable policy stating how the RWF Project is consistent with said policies. Staff determined the consistency certification does not adequately demonstrate how the proposed RWF Project is consistent with Ocean SAMP enforceable policies. To resolve consistency issues, Staff and the developer engaged in continued review of the consistency certification, additional supporting materials, and held weekly detailed consultations. As a result of these efforts, Staff and Revolution Wind have mutually agreed to the following conditions to ensure the RWF Project will be consistent with Ocean SAMP enforceable policies to permit a concurrence.

¹² See Ocean SAMP §§ 11.10.1(D), (G), (H), (J).

¹³ See 15 C.F.R §§ 930.4(a); 930.62(d).

¹⁴ See 15 C.F.R. §§ 930.57; 930.76(a)(2). Specified proposed activities within offshore waters that are subject to federal consistency review for federal licenses or permits must be consistent with enforceable policies of the approved state management program.

¹⁵ See Revolution Wind Farm COP Appendix B; Appendix B-1 listing Revolution Wind's response to each Ocean SAMP enforceable policy.

3.1 Conditions mutually agreed upon pursuant to 15 C.F.R. §§ 930.4 & 930.62.

1. The project, as originally proposed had up to 100 turbine foundations and two offshore substations, has been modified to 79 turbine foundations and two offshore substations. Revolution Wind shall include 79 possible turbine foundation positions, for the installation of 65 turbine foundations to meet the project's 704 MW PPA obligations. The project shall include no more than two offshore substations. As such, this project layout will minimize the reasonably foreseeable effects to Rhode Island coastal resources and uses including effects to those resources and uses with the same characteristics, values, and resources as found in Rhode Island State Waters.
2. Where practicable, turbine and offshore substation foundations and the associated network of inter-array and export cables will be micro-sited to minimize the reasonably foreseeable effects to Rhode Island coastal resources and uses including effects those resources and uses with the same characteristics, resources, and values as found in Rhode Island State Waters.
3. Revolution Wind, LLC shall conduct the fisheries research and monitoring plan that receives final approval from the Bureau of Ocean Energy Management as part of the Record of Decision approving Revolution Wind's Construction and Operations Plan.

4 Review of State Enforceable Policies and Analysis

This section will analyze and discuss relevant Ocean SAMP enforceable policies, corresponding consistency certification statements, and the necessity of the conditions above. An enforceable policy is defined within the federal consistency regulations to mean "State policies which are legally binding through constitutional provisions, laws, regulations, land use plans, ordinances, or judicial or administrative decisions, by which a State exerts control over private and public land and water uses and natural resources in the coastal zone."¹⁶ The regulation further states that an enforceable policy "shall contain standards of sufficient specificity to guide public and private uses."¹⁷ The CRMC's enforceable policies for purposes of

¹⁶ See 15 C.F.R. § 930.11(h).

¹⁷ *Id.*

offshore renewable energy development as approved by NOAA OCM are contained within Chapter 11 of the CRMC’s Ocean SAMP codified as 650-RICR-20-05-11. Specified proposed activities within offshore waters that are subject to federal consistency review for federal licenses or permits must be consistent with enforceable policies of the approved state management program.¹⁸

As required by 15 C.F.R. §§ 930.57 and 930.76(a)(2), Revolution Wind filed a consistency certification with CRMC on June 7, 2021, stating “[t]he Project complies with the enforceable policies of the Rhode Island approved management program and will be conducted in a manner consistent with such program.”¹⁹ In addition, Revolution Wind provided responses to each of the Ocean SAMP enforceable policies within Appendix B-1. The corresponding Revolution Wind response and the CRMC analysis are shown below for applicable Ocean SAMP enforceable policy analysis and discussion as to whether the RWF Project meets the applicable enforceable policy.

4.1 Enforceable Policy § 11.10.1(C):

Offshore developments shall not have a significant adverse impact on the natural resources or existing human uses of the Rhode Island coastal zone, as described in the Ocean SAMP. In making the evaluation of the effect on human uses, the Council will determine, for example, if there is an overall net benefit to the Rhode Island marine economic sector from the development of the project or if there is an overall net loss. Where the Council determines that impacts on the natural resources or human uses of the Rhode Island coastal zone through the pre-construction, construction, operation, or decommissioning phases of a project constitute significant adverse effects not previously evaluated, the Council shall, through its permitting and enforcement authorities in state waters and through any subsequent CZMA federal consistency reviews, require that the applicant modify the proposal to avoid and/or mitigate the impacts or the Council shall deny the proposal.

¹⁸ See 15 C.F.R. §§ 930.57(a); 930.76(c).

¹⁹ See Revolution Wind Farm COP Appendix B.

4.1.1 Revolution Wind Consistency Certification Response:

Regarding the RWF located outside Rhode Island state waters, the RWF is consistent with this policy. The RWF has been sited to avoid areas designated for preservation and avoid, to the extent possible, areas of particular concern. When avoidance is not possible, protection measures will be employed to avoid or minimize impact to any areas of particular concern.

Regarding the Revolution Wind Export Corridor (“RWEC”), the RWEC is consistent with this policy. The RWEC has been sited to avoid areas designated for preservation and avoid, to the extent possible, areas of particular concern. When avoidance is not possible, protection measures will be employed to avoid or minimize impact to any areas of particular concern. (CZM Consistency Statements at Appendix B-1)

4.1.2 CRMC Analysis:

Enforceable policy § 11.10.1(C) requires Staff to conduct a two-part review. The first part requires the Council determine whether “there is an overall net benefit to the Rhode Island marine economic sector from the development of the project or if there is an overall net loss.” The second part requires the Council to determine whether the applicant has adequately modified the proposal to avoid and/or mitigate impacts.

4.1.2.1 It is unclear whether there will be an overall net benefit to the Rhode Island marine economic sector from the Project or if there will be an overall net loss.

The first part of the enforceable policy requires that the Council determine whether “there is an overall net benefit to the Rhode Island marine economic sector from the development of the project or if there is an overall net loss.” The RWF project is anticipated to provide certain benefits to the state while also having negative impacts on the marine economic sector. Table 3.3.10-1 *Potential Port Facilities* of the RW COP indicates several Rhode Island ports which could be potential locations for construction and operation/maintenance facilities. The Port of Providence, Port of Davisville and Quonset Point, and the Port of Galilee may support activities ranging from WTG tower and blade storage to foundation component fabrication and electrical

activities/support.²⁰ Additionally, Table 4.6.1-6 *Summary of Jobs and Investment Impacts in the United States* of the RW COP describes the total jobs and value added for construction and operation phases of the RWF and RWEC in the United States.²¹ The total construction phase value added for the United States is in excess of approximately \$600 million USD (in 2020 dollars), of that amount the value added to Rhode Island may be in excess of \$300 million USD.²² However, this value added to Rhode Island is based on a two-year construction phase and Revolution Wind has stated there will be a one-year construction phase; therefore, value added to Rhode Island from construction could range from approximately \$150 million USD to over \$300 million USD.²³ The annual operations phase value added for the United States is expected to be approximately \$80 million USD with the majority being realized by Rhode Island in the order of approximately \$70 million USD.²⁴

Negative impacts are anticipated for Rhode Island-based commercial and recreational fishers from the development of the Project. Regarding the commercial and for-hire recreational fishing sectors, the RWF may cause major adverse incremental and overall cumulative impacts.²⁵ Temporary navigational restrictions during construction will preclude fishers from accessing some areas of the RWEC and lease area.²⁶ If fishers are “unable to find suitable alternative fishing locations...the adverse impacts would be temporarily major.”²⁷ For example, short-term impacts would include but are not limited to loss in time, fuel, potential catch, and overall effort. The presence of structures will also alter navigational patterns in the long term. This displacement is anticipated to create user conflicts and force some fishers to find alternative fishing locations or exit the fishery permanently.

Changes to benthic habitat through construction and operation/maintenance activities and the presence of structures are anticipated to have negative impacts on the Rhode Island marine economic sector. Regardless of micro-siting the RWEC, inter-array cables, and WTG

²⁰ See Revolution Wind Farm COP Table 3.3.10-1 at 113-114.

²¹ See Revolution Wind COP Table 4.6.1-6 at 624.

²² *Id.*; see also Revolution Wind COP Appendix CC.

²³ See Revolution Wind COP Appendix CC 4.1 at 11.

²⁴ *Id.*

²⁵ See Revolution Wind Draft Environmental Impact Statement Table 2.3-1 at 2-65 to 2-68 [hereinafter DEIS].

²⁶ See DEIS section 3.9.2.2 at 3.9-57 to 3.9-62.

²⁷ *Id.* at 3.9-62.

foundations, complex glacial moraine habitat and boulders will be disturbed and moved impacting the ability to safely and productively fish in the project area. The Revolution Wind DEIS states that the “presence of structures would [] result in a long-term moderate adverse effect on benthic habitat.”²⁸ Rhode Island fishers possess irreplaceable generational territorial knowledge which factors into their ability to be successful in their trade. FAB members have described how they know the locations of certain “hangs” and boulders with such precision that they can fish within feet of a *known* obstacle. Fishers will not have information describing where boulders have been moved, where new hangs *may* be, where foundations/cables are, and locations of scour and secondary cable protection until after the construction phase of the project is complete. Construction is anticipated to take one year. Only when that information is available will fishers be able to begin adapting to fishing within a large-scale wind farm. Notwithstanding navigational changes, displacement/user conflict, and temporary access restrictions, Rhode Island fishers will need to assume more operational, economic, and personal safety risk during the one-year construction phase and beyond.

Other small businesses which make up the shoreside supply chain will also be negatively impacted by the development of the project. This includes but is not limited to fish markets, distribution, processing, recreational fishing licenses, bait and gear sales, boat repairs, hotels, restaurants, shoreside fish sales, fuel, travel, and taxes. These support industries need to be accounted for at a granular level because industries like hotels may survive a decline in fishing effort, but specialized companies like those that produce ice for commercial fishing orders may no longer be economically viable.

Changes required in Federal and State sampling to assess the fishery stocks will result in a burden on Rhode Island taxpayers to fund the re-tooling of important fisheries management research. The addition of structures in the water and the potential for any vessel to enter the area in inclement weather adds to the risk of human mortality that currently does not exist. The potential exists for an insurance company to evaluate the evolving risk and deny coverage in specific areas effectively precluding Rhode Island fishers from an area and exacerbating costs. At present, there is no way to predict how the insurance industry will respond until we have

²⁸ See DEIS section 3.6.2.2 at 3.6-31.

information regarding how fishers operate within wind farms. Furthermore, an independent National Academy of Sciences report funded by BOEM and wind developers indicates radar navigation risks but specifically fails to consider impacts to radar while working within (i.e., commercial fishing) within an offshore wind array.²⁹ Overall, there will likely be a net loss to existing Rhode Island based marine businesses who either directly or indirectly profit from the fishery resources located with the proposed RWF project.

Based on discussions between Staff, the FAB, and Revolution Wind, the fisheries economic exposure value for Rhode Island attributable to the RWF lease area and export cable corridor over the 30-year project lifetime is between \$3,954,000 (WHOI³⁰ estimate) and \$37,080,000 (FAB estimate). Revolution Wind's exposure estimate is premised on 50 percent losses to the fishing sector during the one-year construction phase and during the one-year decommissioning phase. Additionally, Revolution Wind estimates a 5 percent annual loss over the 28-year operational phase. The FAB's exposure estimate over the 30-year life of the project is premised on a \$34,000,000 loss to commercial fishing (including 70 percent loss at a 3 percent discount rate due to operations in the WLA), \$1,580,000 loss to recreational fishers, and a \$1,500,000 loss to charter fishers. Based on the FAB's estimation, losses to the Rhode Island fishing sector would be a significant loss to the state economy and would negate approximately 25 percent of the value added from the project to the state during the one-year construction phase. Therefore, given the uncertainties of Revolution Wind's economic exposure estimate and the FAB estimated potential losses, CRMC Staff cannot determine whether there will be an overall net benefit to the Rhode Island marine economic sector from the RWF Project or if there will be an overall net loss.

²⁹ See National Academies of Sciences, Engineering, and Medicine. 2022. *Wind Turbine Generator Impacts to Marine Vessel Radar*. Washington, DC: The National Academies Press. <https://doi.org/10.17226/26430>. Concluding in-part that wind turbine generators have significant electromagnetic reflectivity, and therefore can interfere with radar systems operating nearby.

³⁰ The Woods Hole Oceanographic Institution (WHOI) has been hired by Revolution Wind to conduct fishery economic exposure analysis on economic effects to Rhode Island commercial and for-hire fishers.

4.1.2.2 Notwithstanding unknown impacts, Revolution Wind has adequately modified the project to avoid and/mitigate reasonably foreseeable impacts.

The second part of the enforceable policy requires that “the applicant modify the proposal to avoid and/or mitigate the impacts or the Council shall deny the proposal.” In the case of federal consistency, the Council would object to the project consistency certification in the event significant adverse effects from the project cannot be avoided or mitigated in accordance with the CRMC enforceable policies. BOEM is the lead federal agency for the permitting of offshore wind projects in federal waters. BOEM announced the availability of the Draft Environmental Impact Statement for Revolution Wind on August 29, 2022, which includes a comparison of incremental and overall cumulative impacts across five project alternatives including a no-action alternative. Several impacts pertinent to Rhode Island coastal resources and user interests are analyzed in section 3 of the DEIS. Anticipated impacts to Rhode Island coastal resources and uses generally range from moderate adverse to major adverse and include:

- Disruption to access or temporary restriction in port access or harvesting activities due to construction of offshore project elements.
- Disruption to harvesting activities during operations of offshore wind facilities.
- Changes in vessel transit and fishing operation patterns.
- Changes in risk of gear entanglement or target species.

As noted above, BOEM anticipates disruptions to access and commercial fish harvesting activities throughout the life of the project. The FAB has indicated there will be changes in vessel transit and fishing operations due to the Project’s scale. By way of comparison, the Block Island Wind Farm consists of five wind turbines while the RWF will consist of 67 foundations (65 WTGs, 2 OSSs). The RWF DEIS states “WTG [and OSSs] could result in de facto exclusion if fishing vessel operations are not – or perceive that they are not – able to safely navigate in the area around WTGs.”³¹ Furthermore, the FAB has stated there will be an increased risk of gear entanglement due to wind farm construction vessels, foundations, and secondary cable protection. They have described how commercial fixed gear fishers (i.e., lobster pots and gillnets) will face a significant loss of gear sets by conforming to the one-by-one (1x1) nautical

³¹ See DEIS section 3.9.2.2 at 3.9-65.

mile (NM) uniform grid wind turbine layout as compared to current operations. Loss of gear sets will likely occur because fixed gear will mostly be set in between turbine foundations and only along the east-west rows of turbines so mobile gear fishers towing nets or dredges can operate in the clear lanes between the rows of turbines. The FAB explained that as a result of the Project, fishers will be forced to alter how they operate as an industry and may be forced to modify costly gear, hire additional crew to assist with navigation, risk losing gear to entanglement with project infrastructure, or be forced out of the lease area all together among other things.

As shown in Figure 1 and Figure 2 below, the RWF will be located in-part in a large expanse of glacial moraine habitat, an area known as Cox Ledge, which is critical to Rhode Island coastal resources and users. As described in Ocean SAMP § 11.10.2(C)(3) glacial moraines are characterized by their relative structural permanence and structural complexity. “Glacial moraines create a unique bottom topography that allows for habitat diversity and complexity, [allowing] for species diversity in these areas and [creating] environments that exhibit some of the highest biodiversity” in the region.³² Glacial moraine habitats take thousands of years to form and are particularly fragile, lending to long-term recovery times. The Revolution Wind DEIS states long-term effects include those which are felt for “decades or longer, including impacts beyond the life of the Project.”³³ Because of the complex glacial moraine, Cox Ledge is rich in commercially and recreationally targeted marine species and shares the same characteristics, values, and resources as CRMC designated areas of particular concern (APC) located within State Waters.³⁴ Cox Ledge is designated on nautical charts and in charter fishing brochures further demonstrating its importance to commercial and recreational fishing.

³² See Ocean SAMP § 11.10.2(C)(3).

³³ See DEIS Table 3.3-4 at 3-8 defining the duration of project effects.

³⁴ See Ocean SAMP § 11.10.2(A) describing APCs designated in State Waters.

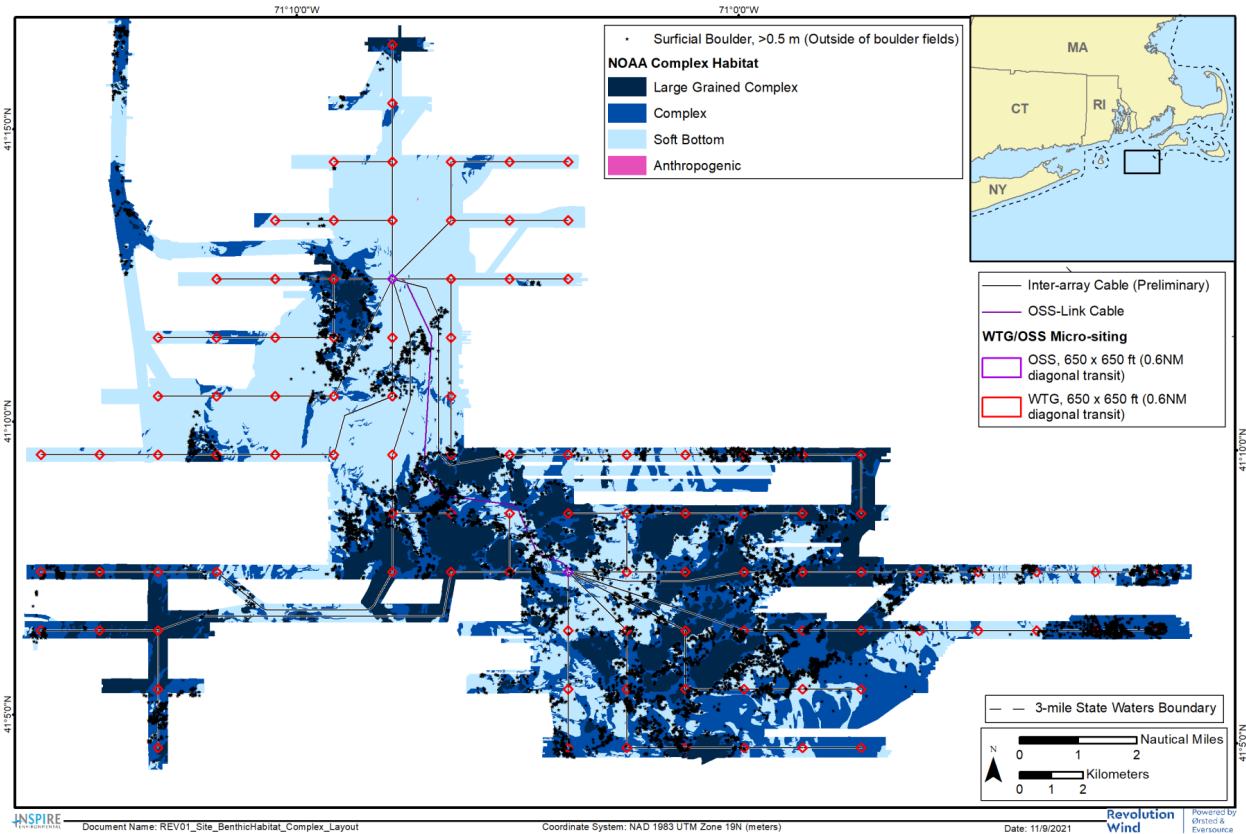


Figure 2: Distribution of large-grained complex, complex, and soft-bottom benthic habitat within the Revolution Wind Farm maximum work area and total acres by habitat type. See DEIS Figure 3.6-2.

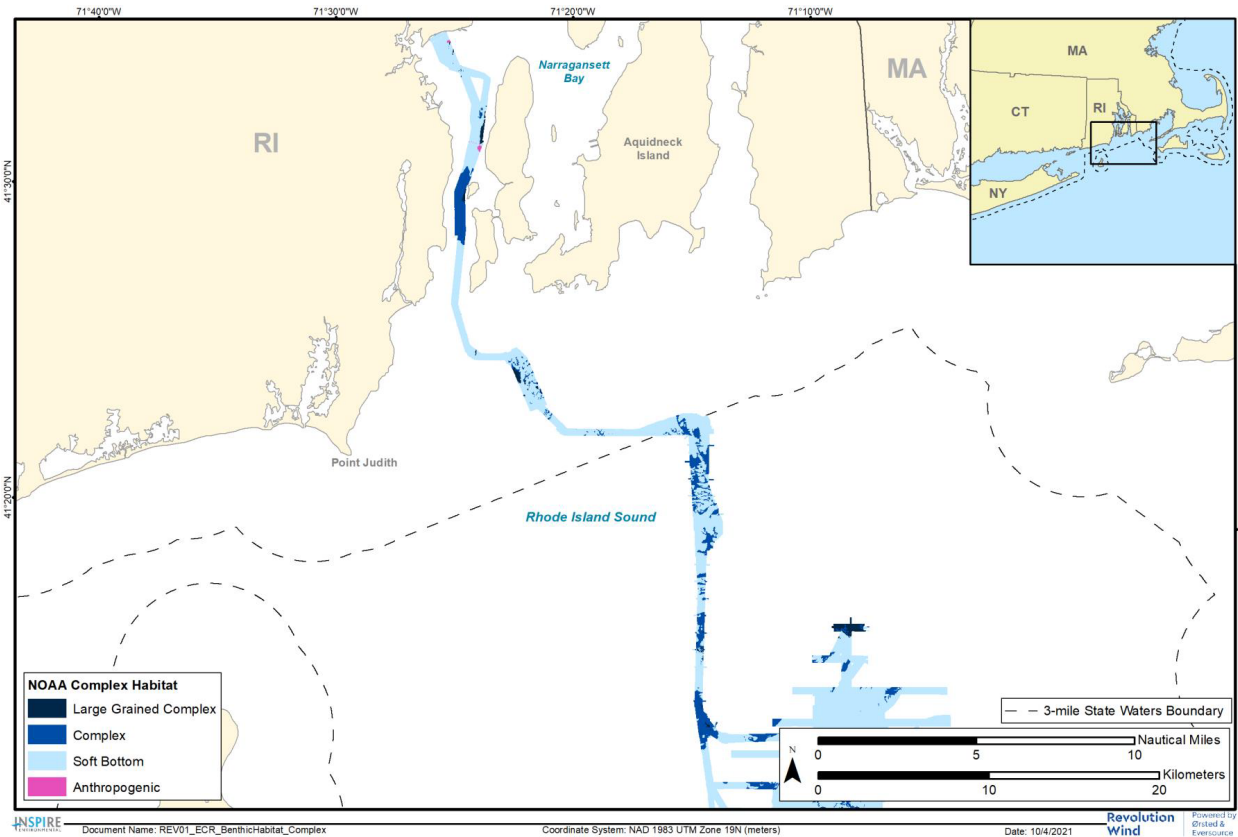


Figure 3: Distribution of large-grained complex, complex, and soft-bottom benthic habitat within the Revolution Wind Export Cable corridor and total acres by habitat type. See DEIS Figure 3.6-3.

Cox Ledge is also home to Atlantic Cod and plays a critical role in the fish stock’s development. Cox Ledge is one of the few remaining places in southern New England where Atlantic Cod is found at all life stages. This area is home to a biologically distinct population of Atlantic Cod which is vulnerable to disturbance from offshore wind energy construction and operation during their spawning period. A recent study looked at Atlantic Cod spawning behavior in southern New England and assessed potential interactions with offshore wind energy.³⁵ The study states Atlantic Cod exhibit spawning site fidelity in that they migrate to the same areas each year to engage in various spawning behaviors.³⁶ “This aggregation behavior includes courtship rituals in which males produce repetitive grunt-like sounds to attract a

³⁵ Van Hoeck, Rebecca V., Rowell, Timothy J., Dean, Micha J. Rice, Aaron N., Van Parijs, Sofie M. 2023. Comparing Atlantic cod temporal spawning dynamics across a biogeographic boundary: Insights from passive acoustic monitoring. Vol. 15, Issue 2. Marine and Coastal Fisheries. 4-5. Stating data collection included passive acoustic monitoring from 2013-2015 and 2020-2022 and mobile autonomous underwater gliders from 2019-2022.
³⁶ Van Hoeck, et al., 2023 at 2-3.

mate.”³⁷ The study also describes how the combination of “spawning site fidelity and the use of acoustic communication during spawning could make Atlantic Cod vulnerable to acoustic and physical disturbances from [offshore wind energy] construction,” particularly pile driving activities.³⁸ Furthermore, the study found a majority of spawning activity occurs in November and December. The Atlantic Cod stock is deemed overfished, and many stakeholders are concerned disruptions from construction and operation activities will have negative impacts on this distinct cod population’s ability sustain and rebuild.

Impacts to the National Marine Fishery Service (NMFS) and the Regional Fishery Management Councils’ (Council) ability to conduct fishery stock assessment surveys may have a negative impact on the ability of the commercial fishers and businesses to remain viable. Various emerging and system-level changes, including climate change and offshore wind energy development, are altering fisheries management which may need to adapt. However, the rate of adaptation is unknown because some data sets, like fishery dependent data, can be based in-part on how fishers are reacting/adapting to conditions at sea.³⁹ Impacts from offshore wind development on the ability of NMFS or a Council to collect appropriate data will increase the uncertainty in setting catch limits. As this uncertainty in the stock assessment increases, “catch limits are generally reduced, which have negative economic consequences for [Rhode Island] fishery participants and their communities.”⁴⁰ A reduction in quotas would likely displace fishers from the RWF lease area and fishing pressure on fishery resources outside of the lease area could be impacted with resources and harvesting income being divided amongst more fishing vessels. This scenario would likely result in lower catch and revenue. This could cause a cascading effect that may point to the need for a reduction in the overall commercial fishing fleet to allow some commercial fishing businesses to remain solvent.

³⁷ *Id.*

³⁸ *Id.*

³⁹ Hogan, Fiona, Hooker, Brian, Jensen, Brandon, Johnston, Lane, Lipsky, Andrew, Methratta, Elizabeth, Silva, Angela, Hawkins, Anne. 2023. Fisheries and offshore wind interactions: synthesis of science. Northeast Fisheries Science Center, NOAA Technical Memorandum NMFS-NE-291. 175. Providing a description of what types of information encompasses fishery dependent data.

⁴⁰ Hogan et al., 2023 at 192-93.

The introduction of the RWF's 67 foundation positions and associated cables will likely disrupt the historic fishing practices observed under the so-called "gentlemen's agreement." The agreement establishes alternating fixed and mobile gear lanes of operation on a 0.5-0.6 NM east-west grid within Rhode Island Sound, allowing fishers utilizing various gear types to operate cooperatively and minimize user conflicts. The addition of wind turbine infrastructure on a 1x1 NM uniform grid will reduce the available area for fixed gear fishing making it extremely difficult and dangerous to operate between foundations. The uniform grid will also increase the risk of allision and may require fishing operations to hire additional crew specifically for navigation within the wind farm.⁴¹ Additionally, adverse weather conditions may require vessels to transit around the RWF all together. Absent significant modifications/upgrades to navigation equipment or adding additional crew for safe operations, Rhode Island commercial fishers may not be able to harvest within the RWF lease area. Interference impacts of turbine foundations on vessel radar may increase the risk of both collision and allision within the wind farm. As stated previously, the presence of infrastructure could result in de facto exclusion if fishing vessel operations are not – or perceive that they are not – able to safely navigate within the area either for fishing or transiting to other fishing grounds.

Pre-construction geophysical surveys were conducted to support the development of the RWF COP, and further survey vessel activity continues as the project is further refined to a final design. The CRMC received several reports over the course of pre-construction activities of survey vessel operations impacting Rhode Island based commercial fishing operations. Interactions include but are not limited to the displacement of fishing activity during active geophysical surveys. Survey vessel locations were, and continue to be, communicated to fishers via "Mariner Reports." There were reports of survey vessels being present in areas that were not included in these Mariner Reports. CRMC learned that in instances where a survey vessel could operate in an area due to weather or other factors, vessels would conduct surveys in a different area. These pre-construction survey activities resulted in a temporary displacement of both commercially targeted species and fishing effort.

⁴¹ "Allision" refers to an accident between a vessel and a stationary object. A "collision" refers to two vessels running into one another.

The CRMC expects significant disruption to existing Rhode Island based coastal uses and resources during the construction and decommissioning phases of the RWF project. The proposed 67 foundations are expected to be installed at a rate of two per day at a time of year intended to minimize disruption to sensitive marine mammals like the North Atlantic Right Whale, among other species. Pile driving of foundations is anticipated within the RWF COP to occur continuously over the course of approximately five months for WTG foundations and approximately four months for OSS foundations.⁴² The noise impact from pile driving will be transmitted along the ocean sediment interface and to a lesser degree in the water column after being somewhat reduced by noise attenuating bubble curtains.⁴³ Regardless of the use of noise mitigating bubble curtains, mortality to eggs and larvae, as well as to those fish, shellfish, and benthic species that do not or cannot leave the area, will occur around each foundation. Additional impacts to the benthic species will occur due to the scale of boulder removal in and around foundation installation sites, along IAC routes, and along the export cable route. Boulder removal will include clearing all areas where foundations and jack-up vessels will be located using a boulder pick tool or a remote operated vehicle (ROV) with a skid attachment. Revolution Wind intends to clear boulders in a 180–200-meter (590–656 foot) radius around each foundation position. However, this level of clearance will not occur at all foundations to minimize impacts to moraine edge and other benthic habitat. For the export cable corridor, Revolution Wind will conduct a pre-lay grapnel run once along the corridor centerline followed by a boulder plow in areas of high-density boulders. The grapnel run is intended to clear the export cable path of marine debris and smaller surface boulders.

Impacts from the decommissioning phase are speculative at this time because BOEM provides various options as to how an offshore wind farm can be decommissioned. Developers are required to submit a conceptual decommissioning plan with their COP. Detailed decommissioning plans are submitted to BOEM at the time decommissioning is requested. Generally, decommissioning as defined by BOEM, is “the removal of all facilities, installations, and other devices permanently or temporarily attached to the seabed on the OCS to a depth of 15

⁴² See Revolution Wind Farm COP section 3.2 at 62-63.

⁴³ *Id.* at 469-470. Describing modeled sound propagation and stating that sound from pile driving occurring at 160dB could travel between 1.5 and 3 miles. The use of bubble curtains and “soft-start procedures” for pile driving reduces noise attenuation by 10dB meaning the associated noise would travel between 1.86 and 2.49 miles.

feet below the mudline.”⁴⁴ BOEM also provides two alternatives to decommissioning: (1) facilities remain in place, or (2) facilities are converted to an artificial reef.⁴⁵

Decommissioning as proposed in the RWF COP may reverse potential beneficial effects. Project infrastructure is anticipated to have an artificial reef effect where various types of marine organisms would be attracted to colonize new structures.⁴⁶ For example, studies at the BIWF documented an increase in the abundance of black sea bass, scup, bluefish, monkfish, winter flounder, and dogfish.⁴⁷ The RWF COP contemplates decommissioning as potentially consisting of the removal of all cables, foundations below the mudline, and all scour and cable protection. Removal of project infrastructure would reverse the artificial reef effect and the “fish community that formed around the reef effect would be dispersed.”⁴⁸ Disruption of the reef effect would create another period of adjustment and uncertainty for fishers as they adjust to another series of changes to the marine and benthic ecosystems. Notwithstanding the method or decommissioning, “BOEM would conduct a NEPA assessment at the time of decommissioning” and “decommissioning may not occur for all project components.”⁴⁹

During the operational phase, RWF infrastructure will cause alterations to existing Rhode Island based fishing activities. As discussed in CRMC’s federal consistency decisions for the South Fork Wind and Vineyard Wind 1 projects, wind developers have adopted a 1x1 NM uniform grid layout as proposed by the fishing industry and strongly recommended by the United States Coast Guard (USCG) in its *Areas Offshore of Massachusetts and Rhode Island Port Access Route Study*.⁵⁰ The spacing may allow for some commercial fishing although substantial modifications to fishing gear and operations would likely be necessary. As previously discussed,

⁴⁴ 30 C.F.R. §§ 585.433; 585.910.

⁴⁵ See Fernandez, Keith Jr., Middleton, Pamela, Salerno, Jennifer, Barnhart, Bethany. 2022. Supporting national environmental policy act documentation for offshore wind energy development related to decommissioning offshore wind facilities. BOEM Office of Renewable Energy Programs, BOEM 2022-010. at 6. Either option for decommissioning is made on a case-by-case basis and considers various factors including potential adverse impacts to the surrounding marine environment.

⁴⁶ See DEIS section 3.13.2.2.2 at 3.13-41.

⁴⁷ *Id.* at 3.13-41 to 3.13-42.

⁴⁸ *Id.* at 3.13-44.

⁴⁹ See Revolution Wind Farm COP section 3.6 at 129-130.

⁵⁰ See U.S. Coast Guard, USCG-2019-0131, *The Areas Offshore of Massachusetts and Rhode Island Port Access Route Study* (2020). <https://www.federalregister.gov/documents/2020/05/27/2020-11262/port-access-route-study-the-areas-offshore-of-massachusetts-and-rhode-island>

BOEM anticipates there could be **major** adverse impacts to commercial fisheries and For-Hire recreational operations as result of the RWF project.⁵¹ Moreover, BOEM expects that “cumulative impacts of the presence of structures” from the RWF “and other past, present, and reasonably foreseeable activities” to have long-term **moderate** to **major** adverse impacts to commercial fisheries and for-hire recreational fishing.⁵² FAB members have expressed significant concern as to the ability to continue fishing within any wind farm. In fact, BOEM’s Record of Decision (ROD) for the Vineyard Wind 1 project states:

While Vineyard Wind is not authorized to prevent free access to the entire wind development area, due to the placement of the turbines it is likely that the entire 75,614-acre area will be abandoned by commercial fisheries due to difficulties with navigation. (Vineyard Wind ROD at 39)

Additionally, the Virginia Coastal Zone Management Program has reported that Virginia fishers are avoiding the Coastal Virginia Offshore Wind pilot project cable corridor out of an abundance of caution. Accordingly, the CRMC expects Rhode Island based coastal uses to be adversely affected and not able to continue at the existing operational level during life of the RWF project.

Rhode Island charter (for-hire) and recreational fishing specifically target Cox Ledge because of its species diversity. Complex bottom habitats and current dynamics create an environment that attracts sport fish of interest including, but not limited to, Atlantic Cod, tuna, pollock, sharks, and other highly migratory species. Because of its popularity, several recreational angler forums have dedicated channels for Cox Ledge and what is being caught there. A potential impact for charter and recreational anglers is for large pelagic sport fish to use foundation structures as cover. With the large amount of line out over the hours trying to land a large fish such as a tuna or shark, it is questionable whether Rhode Island anglers would continue to fish in the RWF lease area on Cox Ledge. Based on this information, and input from the FAB, CRMC expects the RWF’s artificial reef effect to have variable species and angler specific effects.

⁵¹ See *supra* DEIS n. 26 pp. 11.

⁵² See DEIS section 3.9.2.3.3 at 3.9-75.

The Rhode Island charter and recreational fisheries has a significant landside indirect component. Patrons of for-hire fishing businesses and tourists often purchase seafood dockside from the commercial fishermen to round out their Rhode Island experience. While the proposed RWF is located almost entirely in federal waters, the Project is in a region frequented by Rhode Island fishers and recreational anglers from outside Rhode Island. As noted above, the combine economic exposure for for-hire and recreational fishers over the life of the Project is estimated between \$450,000 (WHOI estimate) and \$3,080,000 (FAB estimate) over the life of the Project.⁵³ Accordingly, significant impacts to for-hire and recreational fishers are anticipated at all phases of the Project, with the majority being realized during the construction and operations phases.

There are significant concerns that the wind wake produced by the RWF will alter oceanographic process and affect marine resources. Wind-wake is a region of reduced mean wind speed with increased turbulence in the shadow zone of an offshore wind farm. This reduction in wind speeds “in the lee of the turbine arrays may stabilize water columns, alerting normal ocean conditions.”⁵⁴ Wind wakes may extend tens of kilometers. Wind-wake stabilizing effects can modify oceanic responses to a point where significant effects on fundamental ecosystem processes occur. For example, larval distributions for some species could be impacted via changes in hydrodynamics which could have long-term effects on some commercial fish species. The RW COP states wind-wakes created by foundations “could alter the distribution of zooplankton...which would impact prey availability for some marine mammals.”⁵⁵ Wind-wake could also reduce vertical mixing and ventilation of recycled nutrients. The COP considers effects from habitat alteration on marine mammals from a full buildout to be **direct and long-term**.⁵⁶ However, a recent synthesis paper authored by BOEM, NOAA, and the Responsible Offshore Development Alliance (RODA) states there are “large uncertainties” regarding cumulative effects of large-scale offshore wind infrastructure.⁵⁷

⁵³ *Supra* pp. 13. The WHOI estimate of \$450,000 does not account for recreational fishing. The FAB estimate includes exposure to both recreational and for-hire fishing.

⁵⁴ Hogan et al., 2023 at 17.

⁵⁵ See Revolution Wind Farm COP section 4.3.4.2 at 479.

⁵⁶ *Id.*

⁵⁷ Hogan et al., 2023 at 55.

Wind-wake potentially creates a safety issue for mariners. The United States Coast Guard (USCG) has expressed concerns that wake impacts on the surface circulation will alter their ability to model the surface for search and rescue (SAR) operations. They have called for more research into the ability to accurately model the impact of the wake deficit on surface circulation. Note that these are regional impacts that will affect various stakeholders many kilometers downwind of the actual lease area like ocean yacht races (i.e., Volvo Ocean Race).

The CRMC recognizes the importance of developing offshore wind renewable energy sources to combat and reduce adverse climate change impacts, and to meet state, regional and national greenhouse gas reduction goals as detailed within the Ocean SAMP. One of the CRMC's primary goals is to have cooperative coexistence between the offshore renewable energy industry and existing stakeholders that benefits Rhode Island, while maintaining the integrity and health of the marine ecosystem, coastal resources, and coastal uses. The development of offshore wind under the Ocean SAMP was envisioned as a process in a controlled and scientifically supported way under the guidance of adaptive management with a regional view. The logical development pathway was to start with demonstration projects such as the BIWF, Coastal Virginia Offshore Wind, and the floating wind turbine project in Maine. The South Fork Wind project currently under construction was the next logical step in scaling development to a small utility scale project based on lessons learned from the first step. Lessons learned include both scientific and stakeholder relations. This allows proactive planning based on scientific best practices. The location of the RWF project on Cox Ledge, an area known for its biological diversity, is a particularly risky location for a large-scale offshore wind farm. There is significant uncertainty and lessons yet to be learned without siting the RWF in-part on glacial moraine, including complex marine habitat with similar characteristics, resources, and values as CRMC designated APC in State Waters. The selected project location will impact important marine habitat and species found within the RWF lease area that support Rhode Island based coastal uses.

The joint venture for the RWF Project has made substantial modifications over the course of CRMC's one-year eight-month federal consistency review. The primary Project modifications

came about with the developer's decision to eliminate 21 turbine positions, micro-siting of project infrastructure, a gear loss claims process, and a commitment by the developer to modified boulder relocation operations.

The elimination of 21 turbine foundation positions will mitigate impacts to coastal resources and uses in the lease area by avoiding unnecessary direct impacts to glacial moraine as shown below in Figure 4. In late November 2022, Revolution Wind informed CRMC Staff that after consultations with BOEM, 21 turbine foundation positions are being eliminated from the lease due to technical feasibility issues. The developer stated the foundations cannot be installed due to high concentrations of boulders, soil conditions, and other engineering constraints which make it difficult for jack-up vessels to safely operate or for foundation monopiles to be installed correctly. As a result of this modification, the number of foundation positions has been reduced from 100 to 79 viable positions. Of the 79 viable positions, 65 WTGs will be installed along with two OSSs foundations. The Project will be utilizing an 11 MW WTG to meet its PPA obligations to deliver 704 MWs of renewable offshore wind energy to Rhode Island and Connecticut.⁵⁸ The developer stated the elimination of 21 foundation positions by itself will reduce impacts to complex habitat by approximately 37 percent as compared to the Project Design Envelope of 100 positions. As such, the final 67 foundation buildout will further reduce impacts to Rhode Island coastal resources and uses.

⁵⁸ Although 65 11MW turbines will produce 715 MW of power, 15 MW more than the RW PPA obligations, the extra MW is necessary to account for "line-loss" which occurs at numerous points in the transfer of power from turbines and converter stations to export cable and onshore substation. The extra 15 MWs ensures the appropriate amount of power is delivered at the interconnection point.

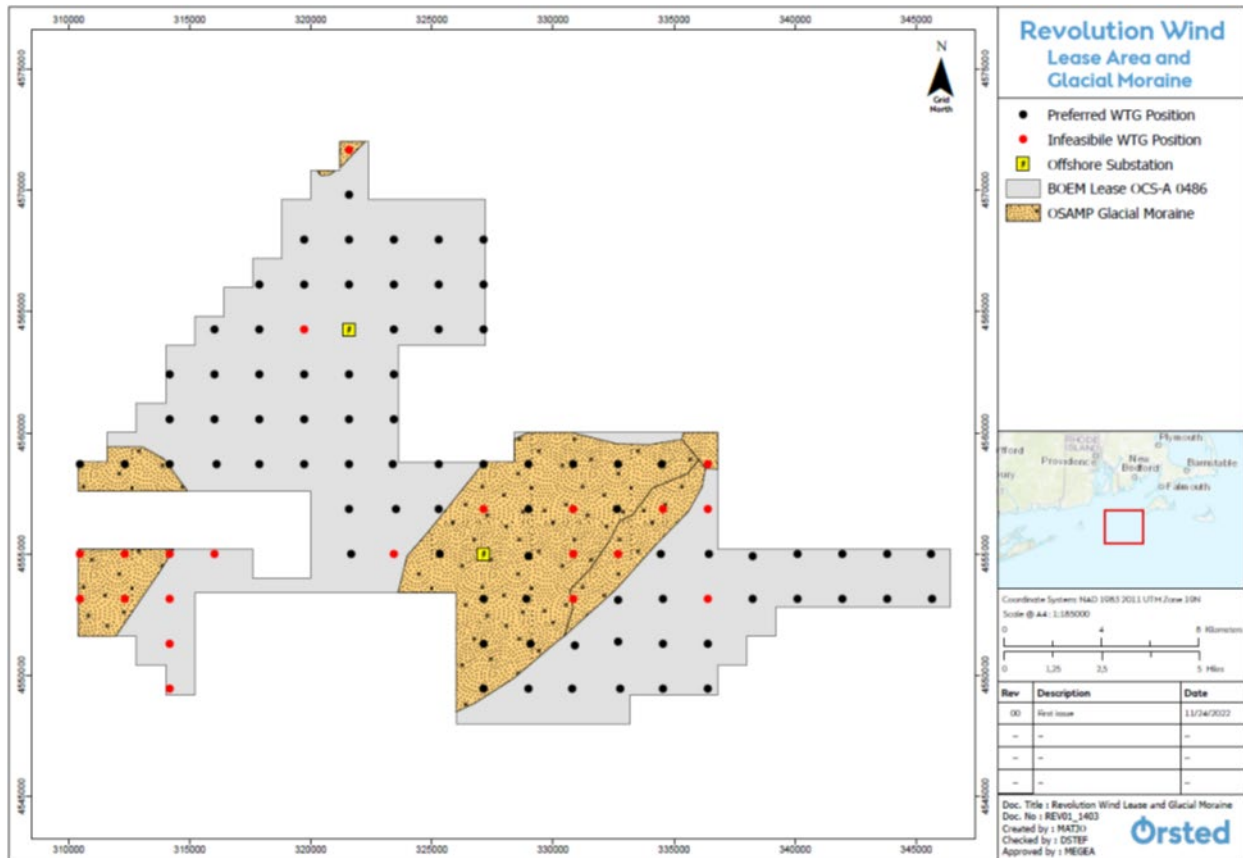


Figure 4: Red dots indicate the 21 turbine positions that have been eliminated by Revolution Wind.

Project layout and micro-siting efforts by the developer will likely further assist in mitigating effects to Rhode Island coastal resources and uses. The RWF will maintain a 1x1 NM uniform grid layout regarding its wind turbines, but there could be potential gaps or holes in the layout because of final engineering/layout decisions yet to be made by BOEM. BOEM may select a final layout that is a combination of DEIS Alternatives C, D, and E which may avoid placing some turbines in sensitive habitat areas, navigation channels, and visual cultural resource areas.⁵⁹ According to the developer, the turbine foundation positions can be micro-sited outside of glacial moraine pending final approval from BOEM with the exception of OSSs. There is also flexibility to further micro-site foundations within a 500-foot radius of their intended position. Additionally, inter-array cables (IAC) will likely not be laid in a grid pattern. Rather, IACs may be routed to the maximum extent practicable to avoid glacial moraine and boulder fields. The developer seeks to further minimize effects from IAC installation by laying cables in a timely

⁵⁹ See DEIS Table 2.1-1 at 2-1 to 2-3; see also DEIS sections 2.1.3; 2.1.4; 2.1.5; 2.1.6.

manner in 800-meter to one-kilometer stretches (up to two kilometers per day), weather depending. Note that 10 percent of the anticipated 155 miles of IAC will require secondary cable protection. Final engineering and layout decisions are made **after** the Federal Consistency review process. CRMC does not have access to additional information regarding final design layouts and must make certain assumptions based on available information.

The developer is willing to continue to refine its Gear Loss Prevention and Claim Procedure to be more accommodating and easier to navigate. FAB members have described a reluctance to utilize the existing gear loss program because it is seen as overly burdensome and discouraging. The gear loss program is a necessary mitigation tool as the project will substantially alter the seafloor and fishing activities creating a significant risk of gear loss. The developer continues to express its willingness to refine its program in furtherance of its goal to coexist with commercial fishing. A “Gear Repository” has also been established by the developer to facilitate the replacement of fishing gear. However, the FAB has stated the Repository is not likely to be useful given that fishers are highly particular in how they’re gear is built and modified to fit their needs. The gear loss claims program can be found on the Ørsted website here: <https://us.ored.com/renewable-energy-solutions/offshore-wind/mariners>

The developer has committed to modified boulder relocation operations to reduce the number of new hangs that may be created for commercial fishers. Along the export cable route, the developer will use a boulder plow to move small boulders up to eight meters to either side of the cable centerline. For IACs, a boulder pick will be used to move boulders eight to fifteen meters 90-degrees from the cable centerline. A boulder pick will also be used to relocate boulders in areas where a jack-up vessel will be positioned. The developer has agreed to keep boulders in the same area/environment they were found in by grouping boulders with **nearby** existing boulders via a boulder pick where practicable. Tool limitations limit the range a boulder can be moved. By relocating boulders to existing areas of boulders, the creation of new hangs should be minimized to the extent practicable. Although this does not eliminate the creation of new hangs or the risk to commercial fishing gear, it is a necessary mitigation strategy.

Revolution Wind has also developed a fisheries communication plan (FCP) to provide notice to mariners of surveys and eventual construction, maintenance, and decommissioning activities. Elements of the FCP can be found here: <https://us.orsted.com/renewable-energy-solutions/offshore-wind/mariners>. Mariner’s Briefings are also available at the previous link and are made available to fishers. These briefing notices include “details of current operational activities offshore, location of the work, information about the vessels being used, as well as future outlooks.” The briefings are typically issued as needed.

The enforceable policy at § 11.10.1(C) requires an applicant “modify the proposal to avoid and/or mitigate the impacts.” CRMC Staff have determined that the above modifications, in addition to other mitigation measures discussed below, made by the developer to the proposed RWF project, the project will be consistent with enforceable policy § 11.10.1(C).

5 Enforceable Policy § 11.10.1(E):

The Council shall prohibit any other uses or activities that would result in significant long-term negative impacts to Rhode Island’s commercial or recreational fisheries. Long-term impacts are defined as those that affect more than one or two seasons.

5.1 Revolution Wind Consistency Certification Response:

Regarding the RWF located outside Rhode Island state waters, the RWF is consistent with this policy. Revolution Wind has conducted an assessment of commercial and recreational fisheries within the region, which encompasses the RWF. The RWF is not expected to have major long-term impacts on commercial or recreational fisheries.

Regarding the RWEC, The RWEC is consistent with this policy. Revolution Wind has conducted an assessment of commercial and recreational fisheries within the region, which encompasses the RWEC. The RWEC is not expected to have major long-term impacts on commercial or recreational fisheries. (CZM Consistency Statements at Appendix B-1)

5.2 CRMC Analysis:

All turbine foundations and the IACs will be installed over a period of approximately five months. The WTG installations on the foundations will be an additional eight-month period,

while the duration of the OSS installation will be approximately four months.⁶⁰ In addition, WHOI, on behalf of RW, conservatively assumed that fish would return one year after pile driving and construction activities cease. Therefore, it is likely that impacts from construction activity would persist beyond one-year and affect more than one or two seasons. The general construction sequence begins with seabed preparation, then moves to installation of monopile foundations followed by the installation of approximately 155 miles of IAC and any necessary cable protection. Given the complex bottom geology and boulder density,⁶¹ many of which will be relocated to accommodate foundations and IACs, there is potential for construction duration estimates to exceed beyond the COP time periods. From CRMC Staff's experiences with the BIWF, there were numerous construction delays that significantly extended the anticipated construction schedule. Currently, time-of-year restrictions for construction are from January to April to account for North Atlantic Right Whale activity. Additional time-of-year restrictions could be required by BOEM or cooperating federal agencies after the federal consistency process concludes. Given this information, it is possible that between weather delays and engineering constraints, the construction time periods could very well be exceeded beyond one or two seasons.

The enforceable policy § 11.10.1(E) considers any negative impact to Rhode Island's commercial and recreational fisheries that exceeds "one or two season" to be a significant long-term impact. As discussed above for enforceable policies § 11.10.1(C), absent mitigation in accordance with enforceable policies §§ 11.10.1(F) and (G), there will likely be significant adverse, long-term effects to Rhode Island-based commercial and recreational activities that operate within the RWF lease area.

6 Enforceable Policy § 11.10.1(F):

The Council shall require that the potential adverse impacts of offshore developments and other uses on commercial or recreational fisheries be evaluated, considered and mitigated as described in § 11.10.1(G) of this Part.

⁶⁰ See Revolution Wind Farm COP section 3.2 at 62-63.

⁶¹ *Id.* at Figures 3.6-2 and Figure 3.6-3 at 3.6-6 to 3.6-7.

6.1 Revolution Wind Consistency Certification Response:

Regarding the RWF located outside Rhode Island state waters, the RWF is consistent with this policy. Revolution Wind has conducted an assessment of commercial and recreational fisheries within the region, which encompasses the RWF. The RWF is not expected to have major long-term impacts on commercial or recreational fisheries and Revolution Wind is committed to collaborative science with the commercial and recreational fishing industries pre-, during, and post-construction.

Regarding the RWEC, the RWEC is consistent with this policy. Revolution Wind has conducted an assessment of commercial and recreational fisheries within the region, which encompasses the RWEC. The RWEC is not expected to have major long-term impacts on commercial or recreational fisheries and Revolution Wind is committed to collaborative science with the commercial and recreational fishing industries pre-, during, and post-construction. (CZM Consistency Statements at Appendix B-1)

6.2 CRMC Analysis:

As shown above in the analyses for §§ 11.10.1(C) and (E), CRMC Staff have determined that there will likely be adverse impacts on commercial and/or recreational fisheries as a result of the RWF Project. Therefore, Staff has considered mitigation measures proposed by Revolution Wind under this enforceable policy and in accordance with § 11.10.1(G).

7 Enforceable Policy § 11.10.1(G):

For the purposes of fisheries policies and standards as summarized in Ocean SAMP Chapter 5, Commercial and Recreational Fisheries, §§ 5.3.1 and 5.3.2 of this Subchapter, mitigation is defined as a process to make whole those fisheries user groups, including related shore-side seafood processing facilities, that are adversely affected by offshore development proposals or projects. Mitigation measures shall be consistent with the purposes of duly adopted fisheries management plans, programs, strategies and regulations of the agencies and regulatory bodies with jurisdiction over commercial and recreational fisheries, including but not limited to those set forth above in § 11.9.4(B) of this Part. Mitigation shall not be designed or implemented in a manner that substantially diminishes the effectiveness of duly adopted fisheries management programs. Mitigation measures may include, but are not limited to, compensation, effort

reduction, habitat preservation, restoration and construction, marketing, and infrastructure and commercial fishing fleet improvements. Where there are potential impacts associated with proposed projects, the need for mitigation shall be presumed (see § 11.10.1(F) of this Part). Mitigation shall be negotiated between the Council staff, the FAB, the project developer, and approved by the Council. The final mitigation will be the mitigation required by the CRMC and included in the CRMC's Assent for the project or, included within the CRMC's federal consistency decision for a project's federal permit application.

7.1 Revolution Wind Consistency Certification Response:

Regarding the RWF located outside Rhode Island state waters, the RWF is consistent with this policy. Revolution Wind has conducted an assessment of commercial and recreational fisheries within the region, which encompasses the RWF. The RWF is not expected to have major long-term impacts on commercial or recreational fisheries and Revolution Wind is committed to collaborative science with the commercial and recreational fishing industries pre-, during, and post-construction. The Project's Fisheries Communication and Outreach Plan summarizes the outreach conducted and includes a Fishing Gear Conflict Prevention and Compensation Plan that identifies measures to prevent gear loss, as well as a claim procedure in the event that gear loss is caused by RWF activities.

The RWEC is consistent with this policy. Revolution Wind has conducted an assessment of commercial and recreational fisheries within the region, which encompasses the RWEC. The RWEC is not expected to have major long-term impacts on commercial or recreational fisheries and Revolution Wind is committed to collaborative science with the commercial and recreational fishing industries pre-, during, and post-construction. The Project's Fisheries Communication and Outreach Plan summarizes the outreach conducted and includes a Fishing Gear Conflict Prevention and Compensation Plan that identifies measures to Prevent gear loss, as well as a claim procedure in the event that gear loss is caused by RWEC activities. (CZM Consistency Statements at Appendix B-1)

7.2 CRMC Analysis:

Whether mitigation measures by the developer will “make whole those fisheries user groups...adversely affected by [an] offshore development project” in accordance with enforceable policy § 11.10.1(G) is unclear because some long-term impacts are unknown. As previously stated for enforceable policy § 11.10.1(C), there are large uncertainties regarding impacts from large-scale offshore wind developments according to BOEM, NOAA, and RODA.⁶² Some of those uncertainties include how commercial and recreational fishers will adapt to fishing in and around wind farms, whether stock assessments can be conducted with enough accuracy to avoid negative economic consequences, and effects from artificial reef effect. Additionally, the Project DEIS indicates that regardless of which project alternative combination is chosen, the RWF Project could have **major** adverse impacts to commercial and for-hire fishing.⁶³ Thus the developer’s consistency certification statement that “the RWF [and export cable corridor are] not expected to have major long-term impacts on commercial or recreational fisheries” may not be accurate.

The developer has made modifications to the project which align with the enforceable policy’s description of mitigation measures. Enforceable policy § 11.10.1(G) states mitigation measures may include, but are not limited to, compensation, effort reduction, habitat preservation, restoration and construction, marketing, and infrastructure and commercial fishing fleet improvements. As stated under enforceable policy § 11.10.1(C), the RWF project has been reduced from 100 to 79 possible positions, 67 of which will be built out. Revolution Wind states viable foundation positions have been micro-sited outside of moraine edges which reduces, but does not eliminate, impacts to glacial moraine. IACs will also be micro-sited to the extent practicable to avoid glacial moraine and boulder fields. Additionally, relocated boulders will be placed with existing boulders to reduce the creation of new hangs rather than be moved 90-degrees from a cable’s centerline. Furthermore, wind infrastructure will have an artificial reef effect which will introduce new habitat and promote the introduction of new species. Note the introduction of artificial reef effect will likely alter the marine ecosystem and will likely not

⁶² *Supra* n. 58 pp. 23.

⁶³ *See* DEIS Table 2.3-1 at 2-65 to 2-68.

amount to a one-to-one replacement of disturbed and/or destroyed existing habitats and resources. It is unknown whether new species will be able to be harvested commercially.

Considerable discussions have occurred over the past several months regarding Project modifications and mitigation measures between CRMC Staff, Revolution Wind, and the FAB. All sides agree project modifications are necessary to reach a consensus on what adequate mitigation measures would be. The FAB attorney provided a memorandum dated December 29, 2022, to CRMC titled “*Review of the Revolution Wind Federal Consistency Statements*.”⁶⁴ The FAB stands by the memorandum’s assertions that the RWF project does not meet any of the CRMC’s Ocean SAMP enforceable policies. In early January 2023, CRMC Staff, Revolution Wind, and the FAB began holding weekly meetings to discuss various mitigation measures including compensatory mitigation and project modifications. Additionally, the FAB and Revolution Wind held ad hoc meetings throughout each subsequent week to further discuss and present mitigation measures.

A key part of these meetings were discussions analyzing the Woods Hole Oceanographic Institution’s (WHOI) “*Fisheries Exposure in Rhode Island from the Revolution Wind Lease Area and the Federal Waters Section of the Revolution Export Cable*.”⁶⁵ This report was prepared by WHOI under contract to Revolution Wind and considers the potential effects of the construction, operations, and decommissioning Project phases on commercial and for-hire charter fishing industries in Rhode Island. There continues to be considerable disagreement between the parties on the value of commercial landings and the economic exposure of charter and recreational fishing conducted within the RWF lease area and along the export cable route.

A number of compensatory mitigation offers and counteroffers were made by the FAB and Revolution Wind in order to reach agreement on mitigation in an effort meet enforceable police § 11.10.1(G). These offers and counteroffers included both compensation and suggested project modifications as mitigation. Despite significant efforts by CRMC Staff over the course of

⁶⁴ See Appendix 6 – FAB Federal Consistency Memo

⁶⁵ See Appendix 7 – WHOI Exposure Report

more than 15 weekly meetings since January 2023, the three parties (CRMC, FAB, and developer) were unable to reach an agreement on a compensatory mitigation package.

The CRMC cannot require monetary compensation as part of its CZMA federal consistency review and decision. Therefore, the CRMC cannot object to the RWF Consistency Certification solely for a failure to reach a compensatory mitigation agreement. The CRMC and an applicant can, however, mutually agree that a compensation amount is sufficient in-part to meet enforceable policies §§ 11.10.1(C), (G), and (H). CRMC Staff believe the Project is consistent with enforceable policy § 11.10.1(H) solely based on the developer’s proposed mitigation measures. Staff are also of the opinion that the Project would be consistent with the enforceable policy if Revolution Wind’s last and best compensatory mitigation offer of \$12,933,333 million were to be agreed to along with the additional FAB requested mitigation measures. Revolution Wind has provided a memo to detailing the Project’s “Modifications and Mitigation Proposal.”⁶⁶

8 Enforceable Policy § 11.10.1(H):

The Council recognizes that moraine edges, as illustrated in Figures 3 and 4 in § 11.10.2 of this Part, are important to commercial and recreational fishermen. In addition to these mapped areas, the FAB may identify other edge areas that are important to fisheries within a proposed project location. The Council shall consider the potential adverse impacts of future activities or projects on these areas to Rhode Island’s commercial and recreational fisheries. Where it is determined that there is a significant adverse impact, the Council will modify or deny activities that would impact these areas. In addition, the Council will require assent holders for offshore developments to employ micro-siting techniques in order to minimize the potential impacts of such projects on these edge areas.

8.1 Revolution Wind Consistency Certification Response:

Regarding the RWF located outside Rhode Island state waters, the RWF is consistent with this policy. The RWF has been sited to avoid and minimize impacts to areas of particular concern, including moraine edges. When avoidance is not possible, protection measures will be employed to avoid to minimize impact to any moraine edges.

⁶⁶ See Appendix 8 – Revolution Wind Modifications and Mitigation Proposal.

The RWEC is consistent with this policy. The RWEC has been sited to avoid and minimize impacts to areas of particular concern, including moraine edges. When avoidance is not possible, protection measures will be employed to avoid to minimize impact to any moraine edges. (CZM Consistency Statements at Appendix B-1)

8.2 CRMC Analysis:

The RWF Project was not originally sited to avoid glacial moraine. In fact, a number of the original 100 turbine positions and IACs were proposed to be located within or going through glacial moraine. The FAB has indicated their preference that no part of the RWF lease area be developed due to the ecological and economic significance of Cox Ledge where the RWF is sited in-part. Cox Ledge has been deemed the “crown jewel” by the Rhode Island based fishing community because it provides unique opportunities for recreational and for-hire fishing activity. The complex nature of the area attracts a large diversity of species including large pelagic predators which draws sport fishers from all over the East Coast.

The Cox Ledge area provides critical ecosystem benefits for early life stages. The developer conducted more detailed high-resolution benthic habit mapping than was available with the development of the Ocean SAMP more than a decade ago. The information was provided to Federal and State agencies. The mapping analysis revealed the extent of glacial moraine and complex bottom geology as far more expansive than previously known to CRMC Staff. As a result of this information, Staff and the developer mutually agreed that a number of foundation locations would need to be micro-sited and/or eliminated, as may be permissible under BOEM regulations at 30 C.F.R. § 585.634, in an effort to minimize impacts to glacial moraine.

As noted herein, the glacial moraine located in the RWF lease area share the same characteristics, values, and resources as CRMC designated APC in enforceable polices §§ 11.10.2(A) and 11.10.2(C)(3). As such, Staff and the developer mutually agreed that further mitigation efforts than were originally proposed were necessary. Under Condition 1, the developer will limit the amount of infrastructure in the lease area to 79 viable foundation

locations (65 turbine foundations and two OSS foundations), the necessary IACs, and the necessary export cables. This condition will help to limit the number of wind turbines in order to minimize impacts to glacial moraine while still allowing the developer to meet its PPA obligations. Under Condition 2, the developer will micro-site turbine and offshore substation foundations, the network of IACs and export cables to the extent practicable to minimize impacts to sensitive habitat areas. As stated previously, the developer has stated turbine foundation positions can be micro-sited outside of glacial moraine pending final approval from BOEM with the exception of OSSs. While impacts to glacial moraine and associated resources will still occur, micro-siting efforts will greatly minimize adverse impacts as compared to the original 100 position buildout. Furthermore, IACs will be routed in a manner so to avoid moraine and boulder fields to the extent practicable. CRMC Staff conclude that the developer's agreement to Conditions 1 and 2 makes the project consistent with this enforceable policy. See further discussion on glacial moraine in enforceable policy § 11.10.2(B).

9 Enforceable Policy § 11.10.1(I):

The finfish, shellfish, and crustacean species that are targeted by commercial and recreational fishermen rely on appropriate habitat at all stages of their life cycles. While all fish habitat is important, spawning and nursery areas are especially important in providing shelter for these species during the most vulnerable stages of their life cycles. The Council shall protect sensitive habitat areas where they have been identified through the Site Assessment Plan or Construction and Operation Plan review processes for offshore developments as described in § 11.10.5(C) of this Part.

9.1 Revolution Wind Consistency Certification Response:

Regarding the RWF located outside Rhode Island state waters, the RWF is consistent with this policy. Revolution Wind has conducted an assessment of commercial and recreational fisheries within the region, which encompasses the RWF. The RWF is not expected to have major long-term impacts on commercial or recreational fisheries and Revolution Wind is committed to collaborative science with the commercial and recreational fishing industries pre-, during, and post-construction.

The RWECC is consistent with this policy. Revolution Wind has conducted an assessment of commercial and recreational fisheries within the region, which encompasses the RWECC. The RWECC is not expected to have major long-term impacts on commercial or recreational fisheries and Revolution Wind is committed to collaborative science with the commercial and recreational fishing industries pre-, during, and post-construction. (CZM Consistency Statements at Appendix B-1)

9.2 CRMC Analysis:

A number of economically and ecologically important finfish species are found within the RWF lease area and along the export cable route. These species are listed in COP Appendix L – Essential Fish Habitat Assessment Table 2.2-1. Portions of the lease area and export cable corridor are designated by NOAA as containing essential fish habitat (EFH) for a number of fish species, including eggs, larvae, juveniles and adults that are listed in the COP Appendix.⁶⁷ Habitat Areas of Particular Concern (HAPC) are also identified with EFH areas.⁶⁸ The Appendix further states “different impact-producing factors may result in varying levels of impact on EFH and the species/life stages that associate with those habitats.”⁶⁹ Project impacts to EFH include potentially significant impacts to Atlantic cod, benthic habitat, habitat conversion and community structure alteration, and sedimentation effects. Much of the EFH is associated with the glacial moraine geology and complex bottom structures indicative of the project area. The glacial moraine issue is further addressed below within enforceable policy § 11.10.2(B).

Based on anticipated impacts to glacial moraine and sensitive habitat areas, the developer has agreed to CRMC recommended conditions which aim to reduce impacts to those resource areas to the extent practicable. Under Condition 1, the developer will limit the amount of infrastructure in the lease area to 79 viable foundation locations (65 turbine foundations and two OSS foundations), the necessary IACs, and the necessary export cables. This condition will help to limit the number of wind turbines in order to minimize impacts to glacial moraine while still allowing the developer to meet its PPA obligations. Under Condition 2, the developer will micro-

⁶⁷ See Revolution Wind Farm COP Appendix L section 2.3 at 33 to 38.

⁶⁸ *Id.* at section 2.2.4 at 8. HAPC are discrete subsets of EFH that provide extremely important ecological functions or are especially vulnerable to degradation. HAPC designation does not confer particular protections.

⁶⁹ *Id.* section 3.1 at 39.

site turbine and offshore substation foundations and the network of IACs and export cables to the extent practicable to minimize impacts to sensitive habitat areas. As stated previously, the developer has stated turbine foundation positions can be micro-sited outside of glacial moraine pending final approval from BOEM with the exception of OSSs. While impacts to glacial moraine will still occur, micro-siting efforts will greatly minimize adverse impacts as compared to the original 100 position buildout. Furthermore, IACs will be routed in a manner so to avoid moraine and boulder fields to the extent practicable. CRMC Staff conclude that the developer's agreement to Conditions 1 and 2 makes the project consistent with this enforceable policy.

10 Enforceable Policy § 11.10.2(B):

The Council has designated the areas listed below in § 11.10.2(C) of this Part in state waters as Areas of Particular Concern. All large-scale, small-scale, or other offshore development, or any portion of a proposed project, shall be presumptively excluded from APCs. This exclusion is rebuttable if the applicant can demonstrate by clear and convincing evidence that there are no practicable alternatives that are less damaging in areas outside of the APC, or that the proposed project will not result in a significant alteration to the values and resources of the APC. When evaluating a project proposal, the Council shall not consider cost as a factor when determining whether practicable alternatives exist. Applicants which successfully demonstrate that the presumptive exclusion does not apply to a proposed project because there are no practicable alternatives that are less damaging in areas outside of the APC must also demonstrate that all feasible efforts have been made to avoid damage to APC resources and values and that there will be no significant alteration of the APC resources or values. Applicants successfully demonstrating that the presumptive exclusion does not apply because the proposed project will not result in a significant alteration to the values and resources of the APC must also demonstrate that all feasible efforts have been made to avoid damage to the APC resources and values. The Council may require a successful applicant to provide a mitigation plan that protects the ecosystem. The Council will permit underwater cables, only in certain categories of Areas of Particular Concern, as determined by the Council in coordination with the Joint Agency Working Group. The maps listed below in § 11.10.2(C) of this Part depicting Areas of Particular Concern may be superseded by more detailed, site-specific maps created with finer resolution data.

10.1 Revolution Wind Consistency Certification Response:

Regarding the RWF located outside Rhode Island state waters, the RWF is consistent with this policy. The RWF is located in federal waters, but within the Ocean SAMP study area, and was sited to avoid Areas of Particular Concern. When avoidance is not possible, protection measures will be employed to avoid or minimize impacts to Areas of Particular Concern.

The RWEC is consistent with this policy. The RWEC was sited to avoid Areas of Particular Concern. When avoidance is not possible, protection measures will be employed to avoid or minimize impacts to Areas of Particular Concern. (CZM Consistency Statements at Appendix B-1)

10.2 CRMC Analysis:

The enforceable policy's mechanism which presumptively excludes all large-scale, small-scale, or other offshore development, or any portion of a proposed project is not applicable in federal waters. States may review, not manage, federal actions under federal consistency in that a state can review a wind developer's consistency certification to determine if adequate management measures are included to make a project consistent with state enforceable policies.⁷⁰ An enforceable policy cannot on its face tell a developer it can or cannot do something. Despite the presumptive exclusion being rebuttable, the notion that a developer would be automatically excluded from placing infrastructure in a specific area equates to the State of Rhode Island taking regulatory action in federal jurisdiction. Therefore, the presumptive exclusion, APC designations, and Ocean SAMP maps indicating where APC are located cannot be used by the State to regulate outside of State Waters. For a federal consistency review, CRMC utilizes the policy rational contained in § 11.10.2(B) to review the RWF project. The enforceable policy's intent is to protect and preserve glacial moraine habitat areas identified within the CRMC's NOAA approved 2011 Geographic Location Description⁷¹ that have the same characteristics, values, and resources as CRMC designated APC located within State Waters. CRMC is able to use any information submitted by a developer over the course of the review process to determine whether adequate mitigation measures have been taken.

⁷⁰ Coastal Zone Management Act Review for Offshore Renewable Energy Projects: Intergovernmental Renewable energy Task Force for the Gulf of Mexico, June 15, 2021, slide 8.

<https://www.boem.gov/renewable-energy/state-activities/noaa-national-ocean-service-czma-david-kaiser>

⁷¹ See 15 C.F.R. § 930.53(a)(1); *see also* Figure 1.

Based on geophysical surveys conducted by the developer, Staff learned the extent of glacial moraine within the RWF lease area is more extensive than previously known meaning the developer would need to commit to a more robust set of mitigation measures. The southern half of the lease area is almost entirely comprised of large-grained complex and complex bottom.⁷² Areas in the northern part of the lease area are comprised of the same bottom habitat.⁷³ As such, Revolution Wind has demonstrated that adequate mitigation measures have been taken to avoid damaging areas of glacial moraine.

CRMC Staff do not agree with RWF Consistency Certification statement that the project was “sited to avoid [APC]” because large portions of the 83,798-acre lease area contain extensive glacial moraine. Ocean SAMP § 11.10.2(C)(3) considers areas of glacial moraine within State Waters to be APC because they contain complex and valuable habitats for marine life. These important, productive habitats support high biodiversity for commercially and recreationally targeted species. The original full buildout of the RWF was to include 100 turbine foundation positions, two OSSs, 155 miles of IAC, nine miles of OSS link cables, and two offshore export cables approximately 21 miles each in federal waters.⁷⁴ A large majority of infrastructure was planned to be located on or routed through complex bottom geology which would result in substantial long-term negative impacts to Rhode Island coastal resources and users alike.

As noted above in enforceable policies §§ 11.10.1(C), (F), and (G), Revolution Wind has made substantial modifications to the project plan and agreed to conditions which will mitigate impacts to complex glacial moraine habitats by reducing the amount of project infrastructure.⁷⁵ Conditions 1 and 2 necessitated the developer consider practicable alternatives that were less damaging to benthic habitats and demonstrate that all feasible efforts have been and are being made to avoid damage to glacial moraine. As such, Staff find that Revolution Wind has

⁷² See *supra* Figure 2 and Figure 3 pp. 16 to 17.

⁷³ *Id.*

⁷⁴ See Revolution Wind COP Table 1.2-1 at 6 to 7.

⁷⁵ *Supra* pp. 24 to 27.

mitigated impacts to glacial moraine in the RWF lease area and export cable corridor and is consistent with Ocean SAMP enforceable policy § 11.10.2(B).

11 Enforceable Policy § 11.10.2(C)(3):

Glacial moraines are important habitat areas for a diversity of fish and other marine plants and animals because of their relative structural permanence and structural complexity. Glacial moraines create a unique bottom topography that allows for habitat diversity and complexity, which allows for species diversity in these areas and creates environments that exhibit some of the highest biodiversity within the entire Ocean SAMP area. The Council also recognizes that because glacial moraines contain valuable habitats for fish and other marine life, they are also important to commercial and recreational fishermen. Accordingly, the Council shall designate glacial moraines as identified in Figures 3 and 4 in § 11.10.2 of this Part as Areas of Particular Concern.

11.1 Revolution Wind Consistency Certification Response:

Regarding the RWF located outside Rhode Island state waters, the RWF is consistent with this policy. The RWF has been sited to avoid areas of particular concern. When avoidance is not possible, protection measures will be employed to avoid and/or minimize impact to glacial moraines.

The RWEC is consistent with this policy. The RWEC has been sited to avoid areas of particular concern. When avoidance is not possible, protection measures will be employed to avoid and/or minimize impact to glacial moraines. (CZM Consistency Statements at Appendix B-1)

11.2 CRMC Analysis:

For the reasons stated above under CRMC enforceable policy § 11.10.2(B), Staff find that Revolution Wind has mitigated impacts to glacial moraine in the RWF lease area and export cable corridor and recommends the Council find the Project to be consistent with Ocean SAMP enforceable policy § 11.10.2(C)(3).

12 Conclusion

Pursuant to 15 C.F.R. §§ 930.4 and 930.78, and for the reasons detailed herein, the CRCM Staff have determined that the mutually agreed upon conditions for the reduction of foundation positions from 100 to 79 (67 of which will be constructed), the micro-siting of foundations, inter-array cables, and export cables, and obligation to conduct the fisheries research and monitoring plan that receives final approval from the BOEM as part of the Record of Decision, that the proposed offshore wind renewable energy project complies with enforceable policies of the Rhode Island coastal management program. Based on Staff's review of the RWF Project and its effects on Rhode Island coastal resources and uses, Staff recommend the Council issue a **concurrence** in this matter. Additionally, CRMC Staff have reviewed all other applicable enforceable policies of the Ocean SAMP at 650-RICR-20-05-11 not specifically identified above and have determined that the RWF Project is consistent with those enforceable policies.

Appendix 1 – RI CRMC 30 Day Letter



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October 21, 2021

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Ørsted Offshore North America
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Amanda Lefton, Director
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Re: Rhode Island CZMA federal consistency review status for the Revolution Wind offshore wind project; Docket No. BOEM-2021-0029; CRMC File No.: 2021-06-029

Dear Mr. Roll and Ms. Lefton,

The purpose of this letter is to provide a status update on the Rhode Island Coastal Resources Management Council's ("CRMC") federal consistency review of the proposed Revolution Wind offshore wind project pursuant to the requirements of 15 C.F.R. § 930.78(a). The CRMC at this time is not issuing a concurrence or an objection to the consistency certification for the Revolution Wind project for the reasons detail herein. However, if the CRMC were required to issue a consistency decision at this time it would be an **objection** based on the information filed to date by Revolution Wind LLC¹, because the project is not consistent with the State's federally approved coastal management program enforceable policies as specified in the CRMC's Ocean Special Area Management Plan at 650-RICR-20-05-11. The CRMC is requesting additional information, as detailed herein, that is necessary to complete our federal consistency review for the Revolution Wind project.

The proposed Revolution Wind offshore wind project is subject to CRMC federal consistency review authority pursuant to Section 307 of the Coastal Zone Management Act ("CZMA") and the CZMA's implementing regulations at 15 C.F.R. Part 930, Subpart E - Consistency for Outer Continental Shelf (OCS) Exploration, Development and Production Activities, as the project is a listed activity pursuant to 15 C.F.R. § 930.53 within the CRMC's federally approved coastal management program.

On April 30, 2021 BOEM issued a Notice of Intent to prepare an Environmental Impact Statement for Revolution Wind LLC's ("Revolution Wind") proposed offshore wind energy facility. The CRMC on May 28, 2021 submitted scoping comments (BOEM-2021-0029-0013) on the Revolution Wind

¹ Revolution Wind, LLC is a 50/50 joint venture between Ørsted North America, Inc. and Eversource Investment, LLC. See: www.revolution-wind.com

construction and operation plan (“COP”). Then on June 7, 2021 Revolution Wind filed with the CRMC a Consistency Certification for the proposed Revolution Wind project as required by 15 C.F.R. §§ 930.58 and 930.76. The CRMC subsequently issued a 30-day letter on June 29, 2021 to Revolution Wind, pursuant to 15 C.F.R. § 930.60(a)(2), notifying the applicant that it did not submit all the necessary data and information as required by the CRMC’s enforceable policies of the Ocean SAMP §§ 650-RICR-20-05-11.10.1(D) and (J). These enforceable policies specifically require that a meeting with the CRMC’s Fishermen’s Advisory Board (“FAB”) and the Habitat Advisory Board (“HAB”), respectively, “shall be necessary data and information required for federal consistency reviews for purposes of starting the CZMA 6-month review period for federal license or permit activities under 15 C.F.R. Part 930, Subpart D, and OCS Plans under 15 C.F.R. Part 930, Subpart E, pursuant to 15 C.F.R. § 930.58(a)(2).” In addition, the CRMC’s enforceable policies at §§ 11.10.1(D)(1) and (J)(1) specify that “the CZMA six-month review period shall not begin until the day after” the FAB and HAB meetings, respectively.

The Federal consistency regulations at 15 C.F.R. § 930.60(a) state that a “State agency’s six-month review period (see § 930.62(a)) of an applicant’s consistency certification begins on the date the State agency receives the consistency certification required by § 930.57 and all the necessary data and information required by § 930.58(a).” Additionally, necessary data and information are described in the Federal consistency regulations as “Information specifically identified in the management program as required necessary data and information for an applicant’s consistency certification.” *Id.* at § 930.58(a)(2). Thus, a meeting with the FAB/HAB is necessary data and information identified in the CRMC’s federally approved management program. A combined meeting of the CRMC’s FAB and HAB was held on August 5, 2021 and in accordance with the afore noted state enforceable policies and the Federal consistency regulations, the CRMC’s CZMA six-month review period for the Revolution Wind project began on August 6, 2021². Accordingly, the CRMC’s 3-month CZMA review status letter, required by 15 C.F.R. § 930.78(a), is due on or before **November 6, 2021**.

Appendix B of the Revolution Wind construction and operation plan (“COP”) provides Coastal Zone Management Consistency Statements for both Rhode Island and Massachusetts, while Appendix B-1 specifically addresses consistency with Rhode Island’s enforceable policies of the Ocean Special Area Management Plan (Ocean SAMP) at 650-RICR-20-05-11. Additionally, Appendix B-1 separately addresses enforceable policies for the Revolution Wind Farm (“RWF”) and the Revolution Wind Export Cable (“RWEC”). The CRMC enforceable policy discussion within each of the following sections applies to both the RFW and the RFEC unless specifically called out within the applicable discussion section.

A. Supplemental information required to address Rhode Island’s enforceable policies

The regulatory standards contained within 650-RICR-20-05-11 are the enforceable policies for purposes of the CZMA federal consistency provisions, specifically Part 11.10. These standards in addition to other applicable federally approved Rhode Island Coastal Resources Management Program enforceable policies are the basis for the CRMC’s CZMA federal consistency certification concurrence or objection. The CRMC is providing the following enforceable policy discussion and requesting specific additional

² The CRMC notified BOEM and Revolution Wind in a letter dated August 18, 2021 that commencement of the CRMC CZMA consistency review for the Revolution Wind project began on August 6, 2021.

information necessary for evaluation of the Revolution Wind consistency certification statements with the applicable enforceable policies.

CRMC Enforceable Policy § 11.10.1(C): *Offshore Developments shall not have a significant adverse impact on the natural resources or existing human uses of the Rhode Island coastal zone, as described in the Ocean SAMP. In making the evaluation of the effect on human uses, the Council will determine, for example, if there is an overall net benefit to the Rhode Island marine economic sector from the development of the project or if there is an overall net loss. Where the Council determines that impacts on the natural resources or human uses of the Rhode Island coastal zone through the pre-construction, construction, operation, or decommissioning phases of a project constitute significant adverse effects not previously evaluated, the Council shall, through its permitting and enforcement authorities in state waters and through any subsequent CZMA federal consistency reviews, require that the applicant modify the proposal to avoid and/or mitigate the impacts or the Council shall deny the proposal.*

Revolution Wind's response to this enforceable policy states that "The RWF and RWEC is consistent with this policy. The RWF and RWEC will not have significant adverse impact on the natural resources or human uses of the Ocean SAMP study area. It is expected that current activities will be able to continue post construction." See Appendix B-1 Coastal Zone Management Consistency Statements: Rhode Island at 11.10.1(C). While it is conceivable that current commercial and recreational fishing operations might be able to continue operating at some level of activity post-construction, it is still not yet clear based on currently available information as to what modifications to the project may be necessary to avoid potential significant impacts to Rhode Island-based commercial and recreational fishery activities.

In both the Vineyard Wind 1 and South Fork Wind projects the CRMC and BOEM independently determined that there would be adverse impacts to existing uses within both of the proposed offshore wind farms. Accordingly, mitigation was necessary to minimize the impacts and required by BOEM of both Vineyard Wind 1 and South Fork Wind. And, given the extensive glacial moraine and associated sensitive marine habitat within the Revolution Wind lease area, we anticipate that significant project modification will be necessary to avoid impacts to extensive glacial moraine and associated sensitive marine habitat, and that mitigation will likely be necessary as well for the Revolution Wind project, as it was for offshore wind projects previously noted. See further discussion below in Ocean SAMP §§11.10.1 (H), 11.10.1 (I) and 11.10.2(B). Revolution Wind should conduct an economic impact analysis of the project on commercial and recreational fisheries for Rhode Island-based vessels harvesting/fishing within the Revolution Wind lease area that takes into account construction, operation and decommissioning phases over the life of the project. We anticipate that any necessary fisheries mitigation discussions will not occur until project alternatives are developed and presented within the Revolution Wind DEIS scheduled to be issued by BOEM on or about July 1, 2022. Revolution Wind will need to provide evidence to the CRMC that the project has been modified to avoid unnecessary adverse impacts and meet its burden of proof under Rhode Island's enforceable policy § 11.10.1(C). Therefore, the CRMC cannot at this time conclude that the Revolution Wind project is consistent with this enforceable policy, as Revolution Wind stated within its consistency certification.

CRMC Enforceable Policy § 11.10.1(H): *The Council recognizes that moraine edges, as illustrated in Figures 3 and 4 in § 11.10.2 of this Part, are important to commercial and recreational fishermen. In*

addition to these mapped areas, the FAB may identify other edge areas that are important to fisheries within a proposed project location. The Council shall consider the potential adverse impacts of future activities or projects on these areas to Rhode Island's commercial and recreational fisheries. Where it is determined that there is a significant adverse impact, the Council will modify or deny activities that would impact these areas. In addition, the Council will require assent holders for offshore developments to employ micro-siting techniques in order to minimize the potential impacts of such projects on these edge areas.

Appendix B-1 of the Revolution Wind COP states in part that “The RWF is consistent with this policy. The RWF has been sited to avoid and minimize impacts to areas of particular concern, including moraine edges.” The same language is provided within Appendix B-1 for Revolution Wind’s response for the RWEC. The CRMC has preliminarily identified multiple turbine foundations, at least twenty-eight (28), including portions of the inter-array cable network and a portion of the export cable route that are located within CRMC-identified glacial moraine as shown in Figure 3 in § 11.10.2(F) of the Ocean SAMP. These areas of glacial moraine have been designated by the CRMC as Areas of Particular Concern (“APC”) as specified within enforceable policies §§ 11.10.2(A) and (C) of the Ocean SAMP. See further discussion below on enforceable policy § 11.10.2(B).

Revolution Wind has not provided any evidence with their consistency certification to demonstrate that the project “has been sited to avoid and minimize impacts to areas of particular concern, including moraine edges” and be consistency with Ocean SAMP enforceable policy § 11.10.1(H). The CRMC is unable at this time to determine the extent of any significant adverse impact to glacial moraine (APC), including moraine edges, because the Revolution Wind COP does not show any CRMC designated glacial moraine in any graphics in relation to the 100 proposed turbine foundations, inter-array cables or export cable shown in Figure 2.2.1-1 of the COP.

All offshore development is presumptively excluded from APC pursuant to Ocean SAMP § 11.10.2(B), as further discussed in detail below. Accordingly, based on the currently available information filed by Revolution Wind, the CRMC has determined that the consistency certification statements for this enforceable policy for both the RWF and RWEC are not accurate and that the Revolution Wind project is not consistent with CRMC enforceable policies, as it appears that both the RWF and RWEC have not been sited to avoid and minimize impacts to APC. Therefore, the CRMC requires Revolution Wind to submit a detailed graphic or graphics that clearly delineate the CRMC identified glacial moraine (identified as Areas of Particular Concern within the Ocean SAMP) in relation to the proposed turbine foundation locations, inter-array cables and the export cable(s) to support the ongoing CRMC CZMA review of this project. The graphic(s) must clearly distinguish between turbine foundations, inter-array cables and export cables that are located within and outside of CRMC identified glacial moraine (APC) as demarcated in Figure 3 in § 11.10.2(F) of the Ocean SAMP. Importantly, Revolution Wind must show how the project avoids impacts to areas of particular concern, including moraine edges, and demonstrate how the Revolution Wind is in compliance with the enforceable policies.

CRMC Enforceable Policy § 11.10.1(D): *The finfish, shellfish, and crustacean species that are targeted by commercial and recreational fishermen rely on appropriate habitat at all stages of their life cycles. While all fish habitat is important, spawning and nursery areas are especially important in providing shelter for these species during the most vulnerable stages of their life cycles. The Council shall protect*

sensitive habitat areas where they have been identified through the Site Assessment Plan or Construction and Operation Plan review processes for offshore developments as described in § 11.10.5(C) of this Part.

NOAA NMFS stated within their June 1, 2021 Revolution Wind scoping comments letter to BOEM that “The proposed Revolution Wind project would be located on Cox Ledge, with a substantial portion of the proposed development overlapping with hard bottom complex habitat that is Essential Fish Habitat (EFH) for a number of managed fish species and trust resources for which NMFS has conservation responsibilities. While the minimization of impacts should be considered in the development of all alternatives, given the particular complexity of habitat in this lease area and the importance of Cox Ledge as a spawning location for Atlantic cod, it will be critical for you to consider a discrete alternative that reduces impacts to fisheries habitats that are more sensitive and vulnerable to impacts. Complex habitats are particularly sensitive and vulnerable to impacts as disturbances or alterations to these habitats can impact both the physical and biological components of these habitats that provide complexity. Impacts to the physical (e.g. three-dimensional structure, crevices) and biological (e.g. epifauna) may be permanent or long-term, typically taking years to decades for recovery. Therefore, an alternative that minimizes effects of the project on complex habitats should be considered in the EIS.” See NOAA NMFS Letter at 4 (<https://www.regulations.gov/comment/BOEM-2021-0029-0035>). We agree with NOAA NMFS in this matter that Revolution Wind needs to provide another project alternative that minimizes effects on complex habitats within the lease area. The CRMC may require project modifications as a condition of any final consistency decision to avoid and minimize glacial moraine and associated sensitive habitat impacts resulting from construction and operation of the Revolution Wind project.

CRMC Enforceable Policy § 11.10.2(B): *The Council has designated the areas listed below in § 11.10.2(C) of this Part in state waters as Areas of Particular Concern. **All large-scale, small-scale, or other offshore development, or any portion of a proposed project, shall be presumptively excluded from APCs.** This exclusion is rebuttable if the applicant can demonstrate by clear and convincing evidence that there are no practicable alternatives that are less damaging in areas outside of the APC, or that the proposed project will not result in a significant alteration to the values and resources of the APC. When evaluating a project proposal, the Council shall not consider cost as a factor when determining whether practicable alternatives exist. Applicants which successfully demonstrate that the presumptive exclusion does not apply to a proposed project because there are no practicable alternatives that are less damaging in areas outside of the APC must also demonstrate that all feasible efforts have been made to avoid damage to APC resources and values and that there will be no significant alteration of the APC resources or values. Applicants successfully demonstrating that the presumptive exclusion does not apply because the proposed project will not result in a significant alteration to the values and resources of the APC must also demonstrate that all feasible efforts have been made to avoid damage to the APC resources and values. The Council may require a successful applicant to provide a mitigation plan that protects the ecosystem. The Council will permit underwater cables, only in certain categories of Areas of Particular Concern, as determined by the Council in coordination with the Joint Agency Working Group. The maps listed below in § 11.10.2(C) of this Part depicting Areas of Particular Concern may be superseded by more detailed, site-specific maps created with finer resolution data. (Emphasis added.)*

Submerged glacial moraine is specifically identified in Ocean SAMP § 11.10.2(C)(3) as areas of particular concern (APC) that represent areas of high biodiversity and essential fish habitat. The installation of wind turbine foundations, inter-array and export cables within these glacial moraine areas will likely result in long-term or permanent significant adverse impacts to habitat and the fish populations that are dependent on these habitat types, and thus impact the Rhode Island based fisheries and communities that rely upon this specific habitat type located within the Revolution Wind project area. The Revolution Wind lease and project are located on and around Cox Ledge, which is an area composed of particularly complex and unique habitat that supports a wide range of important marine species including Atlantic cod fish, a species that is culturally and economically significant to the New England region.

In fact, the CRMC specifically identified significant adverse impacts to glacial moraine on Cox Ledge as a result of the proposed South Fork Wind (SFW) project construction as detailed in the CRMC July 1, 2021 SFW federal consistency decision. *See*:

http://www.crmc.ri.gov/windenergy/dwsouthfork/SFWF_FedConsistencyDecision_20210701.pdf. In

addition, NOAA NMFS also identified concerns for SFW project impacts to Cox Ledge in their June 7, 2021 consultation letter to BOEM (<https://www.boem.gov/renewable-energy/state-activities/sfwf-efh-letter-final-lac>). In that letter NMFS stated that the SFW project “is located on Cox Ledge, an area with particularly complex and unique habitat conditions that support a wide range of marine resources. This area provides habitat for feeding, spawning, and development of federally managed species, and supports commercial and recreational fisheries and associated communities. Impacts to complex habitats, such as those found in the project area, are known to result in long recovery times and may take years to decades to recover from certain impacts. Such impacts may result in cascading long term to permanent effects to species that rely on this area for spawning and nursery grounds and the fisheries and communities that target such species. This area is also known to support spawning aggregations of Atlantic cod.” *See* NOAA NMFS Letter at 4. This glacial moraine habitat in the SFW lease is part of the same habitat complex located within the Revolution Wind project boundary. Indeed, the SFW lease area (OCS-A 0517) was originally part of the larger Revolution Wind lease (OCS-A 0486) before the lease reassignment was unilaterally approved by BOEM in March 2020, 15 months after BOEM initiated its NEPA review with cooperating agencies, which resulted in limited options being available for alternatives to the SFW project to reduce impacts to glacial moraine (areas of particular concern).

The CRMC is obligated through its enforceable policy at § 11.10.1(I) to protect sensitive habitat areas where they have been identified through the Site Assessment Plan or COP review processes. The Ocean SAMP has identified and designated glacial moraines as APC as shown in Ocean SAMP §§ 11.10.2(F) and (G), Figures 3 and 4, respectively. The Revolution Wind consistency certification in Appendix B-1 states in part that the project “is consistent with this policy. The RWF is located in federal waters, but within the Ocean SAMP study area, and was sited to avoid Areas of Particular Concern” (Emphasis added). Based on sources of information other than the Revolution Wind COP, the CRMC staff have preliminarily identified at least 28 turbine foundations, associated inter-array cable and a portion of export cable(s) that are located within CRMC identified glacial moraine (APC). As indicated above in the discussion of enforceable policy § 11.10.1(H), there is no graphic or other evidence within the Revolution Wind COP or Appendices to demonstrate that the project is not located within CRMC designated glacial moraine (APC) as depicted within §§ 11.10.2(F) and (G) of the Ocean SAMP. Accordingly, absent the necessary graphic(s) depicting project elements in relation to glacial moraine

(APC) the CRMC is unable to fully and accurately determine the extent to which any portion of the proposed Revolution Wind project is or is not sited to avoid APC.

Ocean SAMP enforceable policy § 11.10.2(B) presumptively excludes all offshore development including any portion of a proposed project, unless there are no practicable alternatives that are less damaging in areas outside of the APC, and that all feasible efforts have been made to avoid damage to the APC resources and values. Revolution Wind has not provided any graphic(s) that show project elements in relation to glacial moraine (APC), and has also not provided any evidence as to the necessity for turbine foundations, inter-array cables and export cables to be located within APC. In other words, Revolution Wind has not demonstrated that they have sited the project to avoid APC as they claim within their consistency certification statement. Thus, the Revolution Wind project is not consistent with this enforceable policy.

Section 2.2.1.1 of the COP indicates that Revolution Wind “evaluated several WTG layouts within the Lease Area” and that one criterion used was to avoid and/or minimize impacts to sensitive biological habitat. Areas of glacial marine (APC) are sensitive biological habitats, as they provide unique bottom topography that supports structural complexity and some of the highest biodiversity within the entire Ocean SAMP area as described within enforceable policy § 11.10.2(C)(3). Yet, the only two project alternatives described within Section 2.2.1.1 of the COP do not avoid and do not minimize impacts to sensitive biological habitat (i.e., glacial moraine) as identified in Ocean SAMP § 11.10.2(F). Moreover, the COP project design envelope anticipates full build out of the lease area with up to 100 turbines. Thus, Revolution Wind has not provided a project layout that avoids glacial moraine (APC), contrary to Revolution Wind’s own consistency certification statement that the project was sited to avoid Areas of Particular Concern. And, Revolution Wind has not provided any clear and convincing evidence that there are no practicable alternatives that are less damaging in areas outside of the APC.

The CRMC stated clearly in its May 28, 2021 scoping comments (BOEM-2021-0029-0013) on the Revolution Wind COP EIS that at least 28 turbine positions are presumptively excluded under the CRMC enforceable policies. We continue to maintain that position as Revolution Wind has not provided any clear and convincing evidence that the turbines and inter-array cables located within glacial moraine (APC) are necessary to meet the purpose and need of the project. Indeed, in our view Revolution Wind has alternatives so as to avoid construction and installation within glacial moraine, as there are sufficient turbine locations outside of glacial moraine to meet the purpose and need of the project. Furthermore, NOAA NMFS stated within their June 1, 2021 Revolution Wind scoping comments letter that “We remain concerned with construction within this unique area and expect some areas within the lease may not be appropriate for development.” See NOAA NMFS Letter at 3

(<https://www.regulations.gov/comment/BOEM-2021-0029-0035>). In requesting BOEM to provide an alternative within the Revolution Wind EIS analysis to minimize the effect on complex habitat, NOAA NMFS stated “**This alternative should not only consider specific turbine locations for removal, but large portions of the lease dominated by highly complex areas** that provide important functions for associated living marine resources, such as Atlantic cod, a species that is culturally and economically significant to the region. Cox Ledge is an important area for fishing activity, and any adverse impacts to fish habitat or recruitment of economically valuable species may result in subsequent impacts on commercial and recreational fishing opportunities and associated communities. It will be especially important for this alternative to consider both impacts to complex habitats and habitat use by Atlantic

cod. Because cod stocks region-wide are depleted in part due to low recruitment in recent years, any adverse impacts to the spawning and recruitment of Atlantic cod associated with this project may result in significant long-term cumulative impacts to this stock.”(Emphasis added.) *Id* at 4. We agree with the NOAA NMFS position for the necessity to remove turbine locations within a large portion of the lease area composed of complex habitat (i.e., glacial moraine) to avoid and minimize significant impacts to sensitive habitat.

Therefore, absent additional information pursuant to Ocean SAMP §§ 11.10.1(H), 11.10.1(I) and 11.10.2(B), the CRMC at this time cannot conclude that the Revolution Wind project is not located within glacial moraine (APC) or sensitive marine habitat areas. Therefore, the CRMC does not agree with the consistency certification statements that the Revolution Wind project is consistent with the enforceable policies of §§ 11.10.1(H) 11.10.1(I) and 11.10.2(B) as stated within COP Appendix B-1.

CRMC Enforceable Policy § 11.10.2(C)(2): *Offshore dive sites within the Ocean SAMP area, as shown in Figure 2 in § 11.10.2 of this Part, are designated Areas of Particular Concern. The Council recognizes that offshore dive sites, most of which are shipwrecks, are valuable recreational and cultural ocean assets and are important to sustaining Rhode Island’s recreation and tourism economy.*

As noted above, enforceable policy § 11.10.2(B) presumptively excludes all offshore development from Areas of Particular Concern. There may be two offshore dive site that could be impacted by the Revolution Wind project. The wrecks “Neptune” and “PT Teti” are designated offshore dive sites as identified in Figure 2 of the Ocean SAMP at § 11.10.2(F) and appear to be co-located within the export cable route into state waters. However, The Revolution Wind COP does not include any graphic(s) that shows any offshore dive sites in relation to the turbine foundations, inter-array cables or export cables. Appendix B-1 of the Revolution Wind COP indicates that for § 11.10.2(C)(2) the RWF and RWEC are “consistent with this policy, as there are no offshore dive sites of significance in the RWF area” and “there are no offshore dive sites of significance along the RWEC route.” The CRMC is unable at this time to confirm the veracity of Revolution Wind’s consistency certification statements concerning this particular enforceable policy, as Revolution Wind has provided no evidence to demonstrate that the project meets this enforceable policy. Therefore, Revolution Wind will have to submit a graphic(s) that clearly depicts all project elements in relation to any CRMC identified offshore dive sites that have been designated as APCs. Revolution Wind will have to demonstrate that the project avoids or will minimize any potential impacts to these offshore dive sites designated as APC.

CRMC Enforceable Policy § 11.10.2(C)(3): *Glacial moraines are important habitat areas for a diversity of fish and other marine plants and animals because of their relative structural permanence and structural complexity. Glacial moraines create a unique bottom topography that allows for habitat diversity and complexity, which allows for species diversity in these areas and creates environments that exhibit some of the highest biodiversity within the entire Ocean SAMP area. The Council also recognizes that because glacial moraines contain valuable habitats for fish and other marine life, they are also important to commercial and recreational fishermen. Accordingly, the Council shall designate glacial moraines as identified in Figures 3 and 4 in § 11.10.2 of this Part as Areas of Particular Concern.*

Glacial moraines represent areas of high biodiversity and important fish habitat. Impacts to these areas could result in long-term or permanent impacts to fish populations that are dependent on these habitat

types and thus impact the Rhode Island fishery in the area. Additionally, the CRMC is obligated through § 11.10.1(I) to protect sensitive habitat areas where they have been identified through the Site Assessment Plan or Construction and Operation Plan review processes. The Ocean SAMP has identified specific glacial moraines as areas of particular concern (APC) as shown in §§ 11.10.2(F) and (G), Figures 3 and 4, respectively. Revolution Wind's COP indicates that the project is consistent with the enforceable policy and that the project has been sited to avoid any areas of particular concern, including moraine edges. *See* COP Appendix B-1. There is no graphic or other evidence within the COP that clearly shows that the Revolution Wind project is not located within a glacial moraine as depicted within §§ 11.10.2(F) and (G) of the Ocean SAMP. A detailed graphic is requested showing the project elements in relation to existing areas of glacial moraine as mapped within the Ocean SAMP. The CRMC's Ocean SAMP glacial moraine data layers have been included with and are available on the Northeast Regional Ocean Council Ocean Data Portal at <https://www.northeastoceandata.org/>.

Accordingly, absent the specified requested information pursuant to enforceable policies §§ 11.10.2(C)(2) and (3), the CRMC at this time cannot conclude that the project is not located within CRMC identified Areas of Particular Concern. Therefore, the CRMC presently does not agree that the project is consistent with the enforceable policies of Ocean SAMP §§ 11.10.2(B), 11.10.2(C)(2) and 11.10.2(C)(3), as indicated within the Revolution Wind consistency certification (Appendix B-1).

B. Conclusion

Pursuant to the enforceable policies of the Ocean SAMP, offshore developments shall not have a significant adverse impact on the natural resources or existing human uses of the Rhode Island coastal zone. Where the CRMC determines that there are significant adverse effects on Rhode Island coastal resources or uses, it can require the applicant to modify a proposal to avoid and/or mitigate the impacts or the CRMC shall deny the proposal (or issue an objection for federal consistency purposes). *See* Ocean SAMP § 11.10.1(C). As detailed herein, Revolution Wind must provide additional information to support the ongoing CRMC federal consistency review so that the agency can properly assess any potential adverse impacts to Rhode Island-based coastal resources and uses, in particular commercial and charter fishing activities, and evaluate the new information with the CRMC's enforceable policies.

To date the sum of information provided by Revolution Wind to the CRMC does not support Revolution Wind's statements of consistency for some enforceable policies, as detailed herein. I am requesting that Revolution Wind provide the data and information specified herein and listed below **within sixty (60) days from the date of this letter** so that the CRMC can further evaluate and determine whether the Revolution Wind project is consistent with the applicable enforceable policies of the Ocean SAMP. Absent this information during the CRMC's CZMA federal consistency review period, presently scheduled to end on **February 6, 2022**, the CRMC would have to conclude that the Revolution Wind project is not consistent with the Rhode Island coastal management program, and would then have to object to Revolution Wind's consistency certification pursuant to 15 CFR §§ 930.63(c) and 930.78.

C. Requested supplemental information necessary for CRMC review

Revolution Wind must submit a detailed graphic or graphics that clearly delineate the CRMC identified **glacial moraine** (identified as Areas of Particular Concern within Ocean SAMP § 11.10.2) in relation to the proposed turbine foundations, inter-array cable network, offshore substation(s) and the export cables

leading into state waters. The graphic(s) must clearly distinguish turbine foundations, the offshore substation(s), inter-array cables and export cables that are located both within and outside of CRMC identified glacial moraine (APC) as identified and demarcated in Figure 3 in § 11.10.2(F) of the Ocean SAMP.

Revolution Wind must provide an **alternative project layout** inclusive of all project elements (i.e., turbine foundations, offshore substation(s), inter-array cables and export cable(s)) that avoids and does not overlay glacial moraine as identified and demarcated in Figure 3 in § 11.10.2(F) of the Ocean SAMP. Revolution Wind must demonstrate with this alternative project layout that all feasible efforts have been made to avoid damage to APC (glacial moraine) resources and values. This could be commensurate with the NOAA NMFS requested Fisheries Habitat Impact Minimization Alternative specified in NOAA's June 1, 2021 Revolution Wind EIS scoping comments.

Revolution Wind must submit a detailed graphic or graphics that clearly delineate the CRMC identified **offshore dive sites** as identified in Ocean SAMP § 11.10.2(C)(2) and as shown in Figure 2 at § 11.10.2(E) in relation to the proposed turbine foundations, inter-array cable network, offshore substation(s) and the export cables leading into state waters. The graphics must demonstrate that the project elements will not affect the Ocean SAMP offshore dive sites. It may be possible to combine this information request with number 1 above (glacial moraine) given that there may only be two offshore dive sites potentially affected by the Revolution Wind project.

Revolution Wind must submit an **economic impact analysis of the project on commercial and recreational fisheries** for Rhode Island-based vessels harvesting/fishing within the Revolution Wind lease area and along the export cable corridor that takes into account construction, operation and decommissioning phases over the life of the project. The analysis should include all commercial gear types used and commercially harvested species, as well as the valuation of charter/recreational trips by RI-based vessels. The analysis should show baseline fishery landings and average annual values for the period of 2008 through 2019 using multiple data sources to ensure best available information is used in the analysis, and include estimated indirect and direct economic impacts. The CRMC will evaluate the analysis in consultation with NOAA NMFS and RIDEM DMF, and will be considered by the CRMC for evaluating potential adverse impacts under the enforceable policies.

Revolution Wind must submit a revised Fisheries Research and Monitoring Plan as specified within the CRMC email to the Revolution Wind project manager on October 7, 2021. As discussed during the CRMC FAB meeting of September 28, 2021 new monitoring elements were added by Revolution Wind to the draft plan dated June 2021.

Based on the CRMC's CZMA commencement review date of August 6, 2021, a final decision for concurrence or objection to Revolution Wind's consistency certification must be issued by the CRMC on or before February 6, 2022 (six months following commencement of State agency review) pursuant to 15 C.F.R. §§ 930.62, 930.63 and 930.78. Absent the requested information necessary to support a final CRMC federal consistency decision within the allotted CZMA review period and as detailed herein, the CRMC will have to conclude that the Revolution Wind project is not consistent with the enforceable policies of the Ocean SAMP and would therefore have to issue an objection to the Revolution Wind consistency certification. Revolution Wind may find that it needs additional time to prepare and file the requested information with CRMC and that it would be in Revolution Wind's best interests for the CRMC to have additional time to review the project and additional requested information. If so, then the

CRMC is amenable to enter into a mutual agreement with Revolution Wind, LLC as provided for under 15 C.F.R. § 930.60(b) to stay the CRMC's CZMA federal consistency review period for a reasonable period of time, thus rescheduling the date for the CRMC's issuance of a federal consistency decision on Revolution Wind's consistency certification. We note that that BOEM anticipates issuing a Notice of Availability for the Draft EIS on or about July 1, 2022 based on the federal project schedule for Revolution Wind. The CRMC anticipates that important information will be provided within the DEIS especially for potential project alternatives designed to minimize habitat impacts relative to the discussed herein. Therefore, the timing of BOEM's issuance of the DEIS should be strongly factored into consideration of any stay agreement discussions between CRMC and Revolution Wind, LLC.

Please contact me at 401-783-3370 should you have any questions.

Sincerely,



Jeffrey M. Willis, Executive Director
Coastal Resources Management Council

/lat

cc: Jeffrey L. Payne, Ph.D., Director, NOAA OCM (via email)
David Kaiser, NOAA OCM Senior Policy Analyst (via email)
Allison Castellan, NOAA OCM Coastal Management Specialist (via email)
CRMC Council Members
Anthony DeSisto, Esq., CRMC Legal Counsel
James R. Boyd, CRMC Deputy Director

**Appendix 2 – RI CRMC CZMA 6-month
Review Commencement Letter**



State of Rhode Island
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(401) 783-3370
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August 18, 2021 (via email)

Mark Roll
Permit Manager, Revolution Wind
Ørsted North America
56 Exchange Terrace, Suite 300
Providence, RI 02903

Michelle Morin
Chief, Environment Branch for Renewable Energy
U.S. Department of the Interior
Bureau of Ocean Energy Management
45600 Woodland Road, VAM-OREP
Sterling, Virginia 20166

Subject: CRMC Coastal Zone Management Act (CZMA) review commencement for the Revolution Wind project; CRMC File 2021-06-029; Docket No. BOEM-2021-0029

Dear Mr. Roll and Ms. Morin,

As you know, Revolution Wind, LLC³ (Revolution Wind) filed a consistency certification with the Rhode Island Coastal Resources Management Council (CRMC) on June 7, 2021 for the Revolution Wind project, as required by 15 C.F.R. §§ 930.58 and 930.76. The CRMC subsequently issued a 30-day letter to Revolution Wind pursuant to 15 CFR § 930.60(a)(2) on June 29, 2021 notifying the applicant that it did not submit all the necessary data and information (NDI) as required by the CRMC's enforceable policies of the Ocean SAMP §§ 650-RICR-20-05-11.10.1(D) and (J). These enforceable policies specifically require that a meeting with the CRMC's Fishermen's Advisory Board (FAB) and the Habitat Advisory Board (HAB), respectively, "shall be necessary data and information required for federal consistency reviews for purposes of starting the CZMA 6-month review period for federal license or permit activities under 15 C.F.R. Part 930, Subpart D, and OCS Plans under 15 C.F.R. Part 930, Subpart E, pursuant to 15 C.F.R. § 930.58(a)(2)." In addition, the CRMC's enforceable policies at §§ 11.10.1(D)(1) and 11.10.1(J)(1) specify that "the CZMA six-month review period shall not begin until the day after" the FAB and HAB meetings, respectively.

The Federal consistency regulations at 15 C.F.R. § 930.60(a) state that a "State agency's six-month review period (see § 930.62(a)) of an applicant's consistency certification begins on the date the State agency receives the consistency certification required by § 930.57 and all the necessary data and information required by § 930.58(a)." (Emphasis added). Additionally, necessary data and information are described in the Federal consistency regulations as "Information specifically identified in the

³ Revolution Wind, LLC is a 50/50 joint venture between Ørsted North America, Inc. and Eversource Investment, LLC. See: www.revolution-wind.com

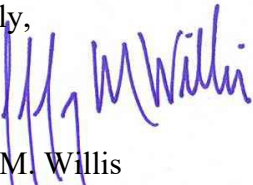
management program as required necessary data and information for an applicant's consistency certification." *Id.* at § 930.58(a)(2). In this matter, as explained above, a meeting with the FAB/HAB is necessary data and information identified in the CRMC's federally approved management program.

A combined meeting of the CRMC's FAB and HAB was held on August 5, 2021 and in accordance with the afore noted state enforceable policies and the Federal consistency regulations, the CRMC's CZMA six-month review period for the Revolution Wind project began as of **August 6, 2021**.

We are writing to inform you of our position regarding the commencement of the CRMC's CZMA review period for the Revolution Wind project and request that you concur with our position via email or written letter at your earliest convenience and no later than ten (10) days from the date of this letter. Thank you.

Please contact me at jwillis@crmc.ri.gov or James Boyd, CRMC Deputy Director at jboyd@crmc.ri.gov or call 401-783-3370 should you have any questions concerning this matter.

Sincerely,



Jeffrey M. Willis
CRMC Executive Director

cc Anthony DeSisto CRMC Legal Counsel
David Kaiser, NOAA (via email)
Kerry Kehoe, NOAA (via email)

Enc. CRMC 30-day letter (June 29, 2021)
FAB/HAB August 5, 2021, meeting agenda

Appendix 3 – RI CRMC CZMA Three Month Letter



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August 18, 2021 (via email)

Mark Roll
Permit Manager, Revolution Wind
Ørsted North America
56 Exchange Terrace, Suite 300
Providence, RI 02903

Michelle Morin
Chief, Environment Branch for Renewable Energy
U.S. Department of the Interior
Bureau of Ocean Energy Management
45600 Woodland Road, VAM-OREP
Sterling, Virginia 20166

Subject: CRMC Coastal Zone Management Act (CZMA) review commencement for the Revolution Wind project; CRMC File 2021-06-029; Docket No. BOEM-2021-0029

Dear Mr. Roll and Ms. Morin,

As you know, Revolution Wind, LLC⁴ (Revolution Wind) filed a consistency certification with the Rhode Island Coastal Resources Management Council (CRMC) on June 7, 2021 for the Revolution Wind project, as required by 15 C.F.R. §§ 930.58 and 930.76. The CRMC subsequently issued a 30-day letter to Revolution Wind pursuant to 15 CFR § 930.60(a)(2) on June 29, 2021 notifying the applicant that it did not submit all the necessary data and information (NDI) as required by the CRMC's enforceable policies of the Ocean SAMP §§ 650-RICR-20-05-11.10.1(D) and (J). These enforceable policies specifically require that a meeting with the CRMC's Fishermen's Advisory Board (FAB) and the Habitat Advisory Board (HAB), respectively, "shall be necessary data and information required for federal consistency reviews for purposes of starting the CZMA 6-month review period for federal license or permit activities under 15 C.F.R. Part 930, Subpart D, and OCS Plans under 15 C.F.R. Part 930, Subpart E, pursuant to 15 C.F.R. § 930.58(a)(2)." In addition, the CRMC's enforceable policies at §§ 11.10.1(D)(1) and 11.10.1(J)(1) specify that "the CZMA six-month review period shall not begin until the day after" the FAB and HAB meetings, respectively.

The Federal consistency regulations at 15 C.F.R. § 930.60(a) state that a "State agency's six-month review period (see § 930.62(a)) of an applicant's consistency certification begins on the date the State agency receives the consistency certification required by § 930.57 and all the necessary data and information required by § 930.58(a)." (Emphasis added). Additionally, necessary data and information are described in the Federal consistency regulations as "Information specifically identified in the

⁴ Revolution Wind, LLC is a 50/50 joint venture between Ørsted North America, Inc. and Eversource Investment, LLC. See: www.revolution-wind.com

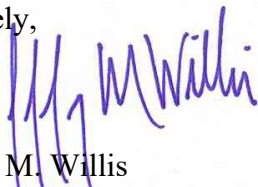
management program as required necessary data and information for an applicant's consistency certification." *Id.* at § 930.58(a)(2). In this matter, as explained above, a meeting with the FAB/HAB is necessary data and information identified in the CRMC's federally approved management program.

A combined meeting of the CRMC's FAB and HAB was held on August 5, 2021 and in accordance with the afore noted state enforceable policies and the Federal consistency regulations, the CRMC's CZMA six-month review period for the Revolution Wind project began as of **August 6, 2021**.

We are writing to inform you of our position regarding the commencement of the CRMC's CZMA review period for the Revolution Wind project and request that you concur with our position via email or written letter at your earliest convenience and no later than ten (10) days from the date of this letter. Thank you.

Please contact me at jwillis@crmc.ri.gov or James Boyd, CRMC Deputy Director at jboyd@crmc.ri.gov or call 401-783-3370 should you have any questions concerning this matter.

Sincerely,



Jeffrey M. Willis
CRMC Executive Director

cc Anthony DeSisto CRMC Legal Counsel
David Kaiser, NOAA (via email)
Kerry Kehoe, NOAA (via email)

Enc. CRMC 30-day letter (June 29, 2021)
FAB/HAB August 5, 2021, meeting agenda

Appendix 4 – Mutually Agreed to Stay Agreements



State of Rhode Island
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March 31, 2023

Elizabeth Klein, Director
Bureau of Ocean Energy Management
45600 Woodland Road
Sterling, Virginia 20166

James Bennett, Program Manager
Office of Renewable Energy
Bureau of Ocean Energy Management
45600 Woodland Road
Sterling, Virginia 20166

Re: **Revolution Wind, LLC**; Docket No. BOEM-2021-0029
CRMC File 2021-06-029

Dear Director Klein and Mr. Bennett,

Pursuant to 15 C.F.R. § 930.76, Revolution Wind, LLC on June 7, 2021 filed with the Rhode Island Coastal Resources Management Council (“CRMC”) a federal consistency certification for the proposed construction and operation of the Revolution Wind offshore wind renewable energy project consisting of up to one hundred (100) wind turbines located in federal waters on the Outer Continental Shelf (“OCS”) approximately 13 nautical miles east of Block Island, RI within BOEM Lease Area OCS-A 0486¹. The Revolution Wind project also includes up to two offshore substations, an inter-array submarine cable network and two submarine export cables co-located within a single corridor to be installed within federal and Rhode Island state waters with a landfall location planned at the Quonset Point Business Park in North Kingston, RI via the West Passage of Narragansett Bay. The Revolution Wind project will deliver 704 megawatts (MW) of offshore wind-generated electricity by way of contractual obligations to Rhode Island (400 MW) and Connecticut (304 MW).

¹ BOEM approved on March 23, 2020 the assignment of a portion of Lease Area OCS-A 0486 to South Fork Wind, LLC creating new Lease Area OCS-A 0517 consisting of 13,700 acres. Consequently, Lease Area OCS-A 0486 was reduced in size from 97,498 to 83,798 acres.

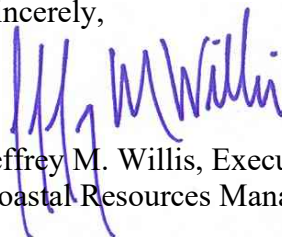
The proposed Revolution Wind project is subject to CRMC federal consistency review authority pursuant to Section 307 of the Coastal Zone Management Act (“CZMA”), 16 U.S.C. § 1451 *et seq.* and the CZMA’s implementing regulations at 15 C.F.R. part 930, subpart E - Consistency for Outer Continental Shelf (OCS) Exploration, Development and Production Activities. The CRMC CZMA review period for the Revolution Wind project commenced on August 6, 2021.² And, on October 21, 2021 the CRMC issued its 3-month CZMA review status letter for the Revolution Wind project as required by 15 C.F.R. § 930.78(a).

The CRMC and Revolution Wind, LLC agreed to an initial stay agreement that began on October 29, 2021, ended September 17, 2022 (96 days of the 6-month review period preserved), and a CRMC consistency decision due by December 21, 2022. A second stay agreement was agreed to and began on November 17, 2022, ended January 20, 2023 and provided for a CRMC consistency decision by February 24, 2023. A third stay agreement was agreed to and began on February 7, 2023 and provided for a CRMC consistency decision date of March 31, 2023. A fourth stay agreement was agreed to and began March 2, 2023 and provided for a CRMC consistency decision by April 28, 2023. A fifth stay has been mutually agreed to and executed by the parties as specified in the attached agreement. **Pursuant to the agreement, the CRMC federal consistency decision in this matter is now due no later than May 12, 2023.**

The purpose of this letter is to notify the Bureau of Ocean Energy Management of this stay agreement pursuant to the requirements of 15 C.F.R. § 930.60(b). In addition, the CRMC requests BOEM to not issue a license or permit to Revolution Wind, LLC until the requirements of 15 C.F.R. Part 930, Subpart E have been completely satisfied. The CRMC will promptly notify BOEM when it issues a federal consistency decision in this matter.

Please contact me at 401-783-3370 or email jwillis@crmc.ri.gov should you have any questions.

Sincerely,



Jeffrey M. Willis, Executive Director
Coastal Resources Management Council

² CRMC notified BOEM, Revolution Wind LLC, and NOAA by letter dated August 18, 2021 that the CRMC CZMA review period commenced on August 6, 2021.

/lat

cc Kellen Ingalls, Project Development Director, Revolution Wind, LLC
Megan Eakin, Permit Manager, Revolution Wind, LLC
Laura Lee Wolfson, BOEM
David Kaiser, NOAA
Allison Castellan, NOAA
CRMC Members
Anthony DeSisto, Esq., CRMC Legal Counsel



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FIFTH AGREEMENT TO STAY SIX-MONTH REVIEW PERIOD

Between

Rhode Island Coastal Resources Management Council

And

Revolution Wind, LLC

The Rhode Island Coastal Resources Management Council, hereinafter referred to as the “CRMC,” and Revolution Wind¹, LLC, hereinafter referred to as “Revolution Wind,” hereby agree as follows.

Pursuant to 15 CFR § 930.76, Revolution Wind filed a federal consistency certification with the CRMC on June 7, 2021 for the proposed construction and operation of a wind energy project on the outer continental shelf (OCS), known as Revolution Wind, consisting of up to 100 wind turbine generators and an export cable that will enter Rhode Island state waters and make landfall at North Kingstown, RI. The Revolution Wind project has been assigned CRMC File 2021-06-029 and is identified on the Federal docket as BOEM-2021-0029. The proposed wind turbine generators will be located within BOEM Lease Area OCS-A 0486 and approximately 16 nautical miles southeast of Point Judith, Narragansett, Rhode Island. The proposed project is subject to CRMC federal consistency review pursuant to Section 307 of the Coastal Zone Management Act (CZMA), and the CZMA’s implementing regulations at 15 C.F.R. Part 930, Subpart E – Consistency for Outer Continental Shelf (OCS) Exploration, Development and Production Activities.

¹ Revolution Wind, LLC is a 50/50 joint venture between Ørsted and Eversource Investment LLC.

The CRMC’s CZMA six-month review period for the Revolution Wind project began on August 6, 2021.² The CRMC issued its 3-month letter to Revolution Wind on October 21, 2021 pursuant to the requirements of 15 C.F.R. § 930.78(a). In that letter the CRMC detailed specific information requirements that Revolution Wind has been requested to provide to the CRMC in order to complete the CRMC’s federal consistency review pursuant to its enforceable policies. Revolution Wind wants to confer with CRMC about the information that it seeks in the 3-month letter issued pursuant to 15 C.F.R. § 930.78(a). Revolution Wind identifies within its COP at Section 1.4.1.2 that the CRMC federal consistency decision for the project is anticipated between Q1 and Q3 2023. In addition, BOEM issued its Notice of Availability for the Draft Environmental Impact Statement (DEIS) in September 2022, and there is considerable information that CRMC believes is valuable to CRMC’s decision making process within the DEIS, including the range of expected project alternatives and mitigation measures.³ Furthermore, the Revolution Wind project has undergone significant refinement in recent months which require substantial State agency time and resources to analyze.

In accordance with 15 CFR § 930.60(b), and in consideration of the parties’ mutual interest that the State have additional time to fully assess the proposed project’s consistency with the State’s enforceable policies, the CRMC and Revolution Wind mutually agree to the following dates and to stay the CRMC CZMA six-month review period as specified herein.

First Stay Agreement:

- Date the CRMC 6-month review period commenced: August 6, 2021
- Date the 6-month review period was to end: February 6, 2022
- Date during the 6-month review period the first stay began: October 29, 2021
- Date the stay was to end: September 17, 2022
(96 days remaining in the 6-month review period)
- Date the 6-month review period ends and the CRMC consistency decision is due: December 21, 2022

² The CRMC notified BOEM and Revolution Wind in a letter dated August 18, 2021 that commencement of the CRMC CZMA consistency review for the Revolution Wind project began on August 6, 2021.

³ See South Fork Wind DEIS at i, stating “Cooperating agencies would rely on the DEIS to support their decision making and to determine if the analysis is sufficient to support their decision.”

Second Stay Agreement:

- Date during the 6-month review period the second stay began: November 17, 2022
- Date the stay was to end:
(35 days remaining in the 6-month review period) January 20, 2023
- Date the 6-month review period ends and
the CRMC consistency decision is due: February 24, 2023

Third Stay Agreement:

- Date second stay ended:
(35 days remaining in the 6-month review period) January 20, 2023
- Date during the 6-month review period the third stay began: February 7, 2023
- Date the third stay was to end:
(17 days remaining in the 6-month review period) March 14, 2023
- Date the 6-month review period ends and
the CRMC consistency decision was due: March 31, 2023

Fourth Stay Agreement

- Date the third stay was to end: March 14, 2023
- Date during the 6-month review period the fourth stay began: March 2, 2023
- Date the fourth stay was to end:
(17 days remaining in the 6-month review period) April 11, 2023
- Date the 6-month review period ends and
the CRMC consistency decision was due: April 28, 2023

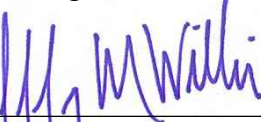
Fifth Stay Agreement

- Date the fourth stay was to end: April 11, 2023
- Date during the 6-month review period the fifth stay begins: March 30, 2023
- Date the fifth stay ends:
(17 days remaining in the 6-month review period) April 25, 2023
- Date the 6-month review period ends and
the CRMC consistency decision is due: May 12, 2023

The CRMC will issue its federal consistency decision on or before **May 12, 2023** unless Revolution Wind and CRMC mutually agree in writing to another later date. Furthermore, should the CRMC conclude its CZMA review earlier than anticipated by this agreement, then the

CRMC will issue its federal consistency decision at the earliest possible time prior to May 12, 2023.

This agreement made and entered by:




Jeffrey M. Willis
Executive Director, CRMC

March 31, 2023

Date

North East Offshore, LLC
by its agent,
Ørsted Wind Power North America LLC



Kellen Ingalls, Authorized Person

March 31, 2023

Date

cc BOEM
NOAA OCM
CRMC Council members



State of Rhode Island
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 3
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March 3, 2023

Elizabeth Klein, Director
Bureau of Ocean Energy Management
45600 Woodland Road
Sterling, Virginia 20166

James Bennett, Program Manager
Office of Renewable Energy
Bureau of Ocean Energy Management
45600 Woodland Road
Sterling, Virginia 20166

Re: **Revolution Wind, LLC**; Docket No. BOEM-2021-0029
CRMC File 2021-06-029

Dear Director Klein and Mr. Bennett,

Pursuant to 15 C.F.R. § 930.76, Revolution Wind, LLC on June 7, 2021 filed with the Rhode Island Coastal Resources Management Council (“CRMC”) a federal consistency certification for the proposed construction and operation of the Revolution Wind offshore wind renewable energy project consisting of up to one hundred (100) wind turbines located in federal waters on the Outer Continental Shelf (“OCS”) approximately 13 nautical miles east of Block Island, RI within BOEM Lease Area OCS-A 0486¹. The Revolution Wind project also includes up to two offshore substations, an inter-array submarine cable network and two submarine export cables co-located within a single corridor to be installed within federal and Rhode Island state waters with a landfall location planned at the Quonset Point Business Park in North Kingston, RI via the West Passage of Narragansett Bay. The Revolution Wind project will deliver 704 megawatts (MW) of offshore wind-generated electricity by way of contractual obligations to Rhode Island (400 MW) and Connecticut (304 MW).

The proposed Revolution Wind project is subject to CRMC federal consistency review authority pursuant to Section 307 of the Coastal Zone Management Act (“CZMA”), 16 U.S.C. § 1451 *et seq.* and the CZMA’s implementing regulations at 15 C.F.R. part 930, subpart E - Consistency for Outer Continental Shelf (OCS) Exploration, Development and

¹ BOEM approved on March 23, 2020 the assignment of a portion of Lease Area OCS-A 0486 to South Fork Wind, LLC creating new Lease Area OCS-A 0517 consisting of 13,700 acres. Consequently, Lease Area OCS-A 0486 was reduced in size from 97,498 to 83,798 acres.

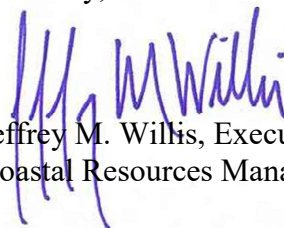
Production Activities. The CRMC CZMA review period for the Revolution Wind project commenced on August 6, 2021.² And, on October 21, 2021 the CRMC issued its 3-month CZMA review status letter for the Revolution Wind project as required by 15 C.F.R. § 930.78(a).

The CRMC and Revolution Wind, LLC agreed to an initial stay agreement that began on October 29, 2021, ended September 17, 2022 (96 days of the 6-month review period preserved), and a CRMC consistency decision due by December 21, 2022. A second stay agreement was agreed to and began on November 17, 2022, ended January 20, 2023 (35 days of the 6-month review period preserved), and a CRMC consistency decision due by February 24, 2023. A third stay agreement was agreed to and began on February 7, 2023 and was slated to end on March 14, 2023 (17 days of the 6-month review period preserved). A fourth stay agreement has been mutually agreed to and executed by the parties as specified in the attached agreement. **Pursuant to the agreement, the CRMC federal consistency decision in this matter is now due no later than April 28, 2023.**

The purpose of this letter is to notify the Bureau of Ocean Energy Management of this stay agreement pursuant to the requirements of 15 C.F.R. § 930.60(b). In addition, the CRMC requests BOEM to not issue a license or permit to Revolution Wind, LLC until the requirements of 15 C.F.R. Part 930, Subpart E have been completely satisfied. The CRMC will promptly notify BOEM when it issues a federal consistency decision in this matter.

Please contact me at 401-783-3370 or email jwillis@crmc.ri.gov should you have any questions.

Sincerely,



Jeffrey M. Willis, Executive Director
Coastal Resources Management Council

/lat

cc Kellen Ingalls, Project Development Director, Revolution Wind, LLC
Megan Eakin, Permit Manager, Revolution Wind, LLC
Laura Lee Wolfson, BOEM
David Kaiser, NOAA
Allison Castellan, NOAA
CRMC Members
Anthony DeSisto, Esq., CRMC Legal Counsel

² CRMC notified BOEM, Revolution Wind LLC, and NOAA by letter dated August 18, 2021 that the CRMC CZMA review period commenced on August 6, 2021.



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FOURTH AGREEMENT TO STAY SIX-MONTH REVIEW PERIOD

Between

Rhode Island Coastal Resources Management Council

And

Revolution Wind, LLC

The Rhode Island Coastal Resources Management Council, hereinafter referred to as the “CRMC,” and Revolution Wind¹, LLC, hereinafter referred to as “Revolution Wind,” hereby agree as follows.

Pursuant to 15 CFR § 930.76, Revolution Wind filed a federal consistency certification with the CRMC on June 7, 2021 for the proposed construction and operation of a wind energy project on the outer continental shelf (OCS), known as Revolution Wind, consisting of up to 100 wind turbine generators and an export cable that will enter Rhode Island state waters and make landfall at North Kingstown, RI. The Revolution Wind project has been assigned CRMC File 2021-06-029 and is identified on the Federal docket as BOEM-2021-0029. The proposed wind turbine generators will be located within BOEM Lease Area OCS-A 0486 and approximately 16 nautical miles southeast of Point Judith, Narragansett, Rhode Island. The proposed project is subject to CRMC federal consistency review pursuant to Section 307 of the Coastal Zone Management Act (CZMA), and the CZMA’s implementing regulations at 15 C.F.R. Part 930, Subpart E – Consistency for Outer Continental Shelf (OCS) Exploration, Development and Production Activities.

The CRMC’s CZMA six-month review period for the Revolution Wind project began on August 6, 2021.² The CRMC issued its 3-month letter to Revolution Wind on October 21, 2021 pursuant to the requirements of 15 C.F.R. § 930.78(a). In that letter the CRMC detailed specific information requirements that Revolution Wind has been requested to provide to the CRMC in order to complete the CRMC’s federal consistency review pursuant to its enforceable policies.

¹ Revolution Wind, LLC is a 50/50 joint venture between Ørsted and Eversource Investment LLC.

² The CRMC notified BOEM and Revolution Wind in a letter dated August 18, 2021 that commencement of the CRMC CZMA consistency review for the Revolution Wind project began on August 6, 2021.

Revolution Wind wants to confer with CRMC about the information that it seeks in the 3-month letter issued pursuant to 15 C.F.R. § 930.78(a). Revolution Wind identifies within its COP at Section 1.4.1.2 that the CRMC federal consistency decision for the project is anticipated between Q1 and Q3 2023. In addition, BOEM issued its Notice of Availability for the Draft Environmental Impact Statement (DEIS) in September 2022, and there is considerable information that CRMC believes is valuable to CRMC’s decision making process within the DEIS, including the range of expected project alternatives and mitigation measures.³ Furthermore, the Revolution Wind project has undergone significant refinement in recent months which require substantial State agency time and resources to analyze.

In accordance with 15 CFR § 930.60(b), and in consideration of the parties’ mutual interest that the State have additional time to fully assess the proposed project’s consistency with the State’s enforceable policies, the CRMC and Revolution Wind mutually agree to the following dates and to stay the CRMC CZMA six-month review period as specified herein.

First Stay Agreement:

- Date the CRMC 6-month review period commenced: August 6, 2021
- Date the 6-month review period was to end: February 6, 2022
- Date during the 6-month review period that the stay begins: October 29, 2021
- Date that the stay ends: September 17, 2022
(96 days remaining in the 6-month review period)
- Date the 6-month review period ends and the CRMC consistency decision is due: December 21, 2022

Second Stay Agreement:

- Date during the 6-month review period that the stay beings: November 17, 2022
- Date that the stay ends: January 20, 2023
(35 days remaining in the 6-month review period)
- Date the 6-month review period ends and the CRMC consistency decision is due: February 24, 2023

Third Stay Agreement:

- Date second stay ended: January 20, 2023
(35 days remaining in the 6-month review period)

³ See South Fork Wind DEIS at i, stating “Cooperating agencies would rely on the DEIS to support their decision making and to determine if the analysis is sufficient to support their decision.”

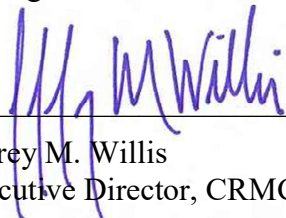
- Date during the 6-month review period the third stay begins: February 7, 2023
- Date the third stay was to end:
(17 days remaining in the 6-month review period) March 14, 2023
- Date the 6-month review periods ends and
the CRMC consistency decision was due: March 31, 2023

Fourth Stay Agreement

- Date during the 6-month review period that the stay begins: March 2, 2023
- Date that the stay ends:
(17 days remaining in the 6-month review period) April 11, 2023
- Date the 6-month review period ends and
the CRMC consistency decision is due: April 28, 2023

The CRMC will issue its federal consistency decision on or before **April 28, 2023** unless Revolution Wind and CRMC mutually agree in writing to another later date. Furthermore, should the CRMC conclude its CZMA review earlier than anticipated by this agreement, then the CRMC will issue its federal consistency decision at the earliest possible time prior to April 28, 2023.

This agreement made and entered by:



 Jeffrey M. Willis
 Executive Director, CRMC

03 March 2023

 Date

North East Offshore, LLC
 by its agent,
 Ørsted Wind Power North America LLC



 Kellen Ingalls, Authorized Person

3 March 2023

 Date

cc BOEM
 NOAA OCM
 CRMC Council members



State of Rhode Island
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February 8, 2023

Elizabeth Klein, Director
Bureau of Ocean Energy Management
45600 Woodland Road
Sterling, Virginia 20166

James Bennett, Program Manager
Office of Renewable Energy
Bureau of Ocean Energy Management
45600 Woodland Road
Sterling, Virginia 20166

Re: **Revolution Wind, LLC**; Docket No. BOEM-2021-0029
CRMC File 2021-06-029

Dear Director Klein and Mr. Bennett,

Pursuant to 15 C.F.R. § 930.76, Revolution Wind, LLC on June 7, 2021 filed with the Rhode Island Coastal Resources Management Council (“CRMC”) a federal consistency certification for the proposed construction and operation of the Revolution Wind offshore wind renewable energy project consisting of up to one hundred (100) wind turbines located in federal waters on the Outer Continental Shelf (“OCS”) approximately 13 nautical miles east of Block Island, RI within BOEM Lease Area OCS-A 0486¹. The Revolution Wind project also includes up to two offshore substations, an inter-array submarine cable network and two submarine export cables co-located within a single corridor to be installed within federal and Rhode Island state waters with a landfall location planned at the Quonset Point Business Park in North Kingston, RI via the West Passage of Narragansett Bay. The Revolution Wind project will deliver 704 megawatts (MW) of offshore wind-generated electricity by way of contractual obligations to Rhode Island (400 MW) and Connecticut (304 MW).

The proposed Revolution Wind project is subject to CRMC federal consistency review authority pursuant to Section 307 of the Coastal Zone Management Act (“CZMA”), 16 U.S.C. § 1451 *et seq.* and the CZMA’s implementing regulations at 15 C.F.R. part 930, subpart E - Consistency for Outer Continental Shelf (OCS) Exploration, Development and Production Activities. The CRMC CZMA review period for the Revolution Wind project

¹ BOEM approved on March 23, 2020 the assignment of a portion of Lease Area OCS-A 0486 to South Fork Wind, LLC creating new Lease Area OCS-A 0517 consisting of 13,700 acres. Consequently, Lease Area OCS-A 0486 was reduced in size from 97,498 to 83,798 acres.

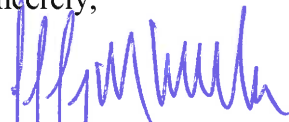
commenced on August 6, 2021.² And, on October 21, 2021 the CRMC issued its 3-month CZMA review status letter for the Revolution Wind project as required by 15 C.F.R. § 930.78(a).

The CRMC and Revolution Wind, LLC agreed to an initial stay agreement that began on October 29, 2021, ended September 17, 2022 (96 days of the 6-month review period preserved), and a CRMC consistency decision due by December 21, 2022. A second stay agreement was agreed to and began on November 17, 2022, ended January 20, 2023 (35 days of the 6-month review period preserved), and a CRMC consistency decision due by February 24, 2023. The second stay agreement has ended; however, the parties have mutually agreed to a third stay of the CRMC CZMA six-month federal consistency review period as specified in the attached agreement executed on February 8, 2023. **Pursuant to the agreement, the CRMC federal consistency decision in this matter is now due no later than March 31, 2023.**

The purpose of this letter is to notify the Bureau of Ocean Energy Management of this stay agreement pursuant to the requirements of 15 C.F.R. § 930.60(b). In addition, the CRMC requests BOEM to not issue a license or permit to Revolution Wind, LLC until the requirements of 15 C.F.R. Part 930, Subpart E have been completely satisfied. The CRMC will promptly notify BOEM when it issues a federal consistency decision in this matter.

Please contact me at 401-783-3370 or email jwillis@crmc.ri.gov should you have any questions.

Sincerely,



Jeffrey M. Willis, Executive Director
Coastal Resources Management Council

/lat

cc Kellen Ingalls, Project Development Director, Revolution Wind, LLC
Megan Eakin, Permit Manager, Revolution Wind, LLC
David Kaiser, NOAA
Allison Castellan, NOAA
CRMC Members
Anthony DeSisto, Esq., CRMC Legal Counsel

² CRMC notified BOEM, Revolution Wind LLC, and NOAA by letter dated August 18, 2021 that the CRMC CZMA review period commenced on August 6, 2021.



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THIRD AGREEMENT TO STAY SIX-MONTH REVIEW PERIOD

Between

Rhode Island Coastal Resources Management Council

And

Revolution Wind, LLC

The Rhode Island Coastal Resources Management Council, hereinafter referred to as the “CRMC,” and Revolution Wind¹, LLC, hereinafter referred to as “Revolution Wind,” hereby agree as follows.

Pursuant to 15 CFR § 930.76, Revolution Wind filed a federal consistency certification with the CRMC on June 7, 2021 for the proposed construction and operation of a wind energy project on the outer continental shelf (OCS), known as Revolution Wind, consisting of up to 100 wind turbine generators and an export cable that will enter Rhode Island state waters and make landfall at North Kingstown, RI. The Revolution Wind project has been assigned CRMC File 2021-06-029 and is identified on the Federal docket as BOEM-2021-0029. The proposed wind turbine generators will be located within BOEM Lease Area OCS-A 0486 and approximately 16 nautical miles southeast of Point Judith, Narragansett, Rhode Island. The proposed project is subject to CRMC federal consistency review pursuant to Section 307 of the Coastal Zone Management Act (CZMA), and the CZMA’s implementing regulations at 15 C.F.R. Part 930, Subpart E – Consistency for Outer Continental Shelf (OCS) Exploration, Development and Production Activities.

The CRMC’s CZMA six-month review period for the Revolution Wind project began on August 6, 2021.² The CRMC issued its 3-month letter to Revolution Wind on October 21, 2021 pursuant to the requirements of 15 C.F.R. § 930.78(a). In that letter the CRMC detailed specific

¹ Revolution Wind, LLC is a 50/50 joint venture between Ørsted and Eversource Investment LLC.

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information requirements that Revolution Wind has been requested to provide to the CRMC in order to complete the CRMC's federal consistency review pursuant to its enforceable policies. Revolution Wind wants to confer with CRMC about the information that it seeks in the 3-month letter issued pursuant to 15 C.F.R. § 930.78(a). Revolution Wind identifies within its COP at Section 1.4.1.2 that the CRMC federal consistency decision for the project is anticipated between Q1 and Q3 2023. In addition, BOEM issued its Notice of Availability for the Draft Environmental Impact Statement (DEIS) in September 2022, and there is considerable information that CRMC believes is valuable to CRMC's decision making process within the DEIS, including the range of expected project alternatives and mitigation measures.³ Furthermore, the Revolution Wind project has undergone refinement in recent months which require additional State agency time and resources to analyze.

In accordance with 15 CFR § 930.60(b), and in consideration of the parties' mutual interest that the State have additional time to fully assess the proposed project's consistency with the State's enforceable policies, the CRMC and Revolution Wind mutually agree to the following dates and to stay the CRMC CZMA six-month review period as specified herein.

First Stay Agreement:

- Date the CRMC 6-month review period commenced: August 6, 2021
- Date the 6-month review period was to end: February 6, 2022
- Date during the 6-month review period that the stay begins: October 29, 2021
- Date that the stay ends: September 17, 2022
(96 days remaining in the 6-month review period)
- Date the 6-month review period ends and the CRMC consistency decision is due: December 21, 2022

Second Stay Agreement:

- Date during the 6-month review period that the stay begins: November 17, 2022
- Date that the stay ends: January 20, 2023
(35 days remaining in the 6-month review period)
- Date the 6-month review period ends and the CRMC consistency decision is due: February 24, 2023

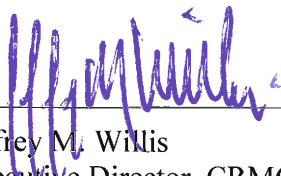
³ See South Fork Wind DEIS at i, stating "Cooperating agencies would rely on the DEIS to support their decision making and to determine if the analysis is sufficient to support their decision."

Third Stay Agreement:


- Date second stay ended:
(35 days remaining in the 6-month review period) January 20, 2023
- Date during the 6-month review period the third stay begins: February 7, 2023
- Date the third stay ends:
(17 days remaining in the 6-month review period) March 14, 2023
- Date the 6-month review periods ends and
the CRMC consistency decision is due: March 31, 2023

The CRMC will issue its federal consistency decision on or before **March 31, 2023** unless Revolution Wind and CRMC mutually agree in writing to another later date. Furthermore, should the CRMC conclude its CZMA review earlier than anticipated by this agreement, then the CRMC will issue its federal consistency decision at the earliest possible time prior to March 31, 2023.

This agreement made and entered by:




Jeffrey M. Willis
Executive Director, CRMC



Date

North East Offshore, LLC
by its agent,
Ørsted Wind Power North America LLC



Kellen Ingalls, Authorized Person

02/8/2023

Date

cc BOEM
NOAA OCM
CRMC Council members



State of Rhode Island
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November 21, 2022

Amanda Lefton, Director
Bureau of Ocean Energy Management
45600 Woodland Road
Sterling, Virginia 20166

James Bennett, Renewable Energy Program Manager
Bureau of Ocean Energy Management
45600 Woodland Road
Sterling, Virginia 20166

Re: **Revolution Wind, LLC**; Docket No. BOEM-2021-0029
CRMC File 2021-06-029

Dear Ms. Lefton and Mr. Bennett,

Pursuant to 15 C.F.R. § 930.76, Revolution Wind, LLC on June 7, 2021 filed with the Rhode Island Coastal Resources Management Council (“CRMC”) a federal consistency certification for the proposed construction and operation of the Revolution Wind offshore wind renewable energy project consisting of up to one hundred (100) wind turbines located in federal waters on the Outer Continental Shelf (“OCS”) approximately 13 nautical miles east of Block Island, RI within BOEM Lease Area OCS-A 0486¹. The Revolution Wind project also includes up to two offshore substations, an inter-array submarine cable network and two submarine export cables co-located within a single corridor to be installed within federal and Rhode Island state waters with a landfall location planned at the Quonset Point Business Park in North Kingston, RI via the West Passage of Narragansett Bay. The Revolution Wind project will deliver 704 megawatts (MW) of offshore wind-generated electricity by way of contractual obligations to Rhode Island (400 MW) and Connecticut (304 MW).

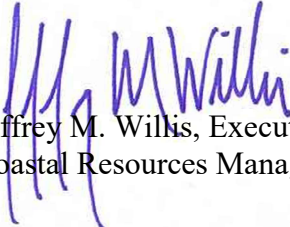
¹ BOEM approved on March 23, 2020 the assignment of a portion of Lease Area OCS-A 0486 to South Fork Wind, LLC creating new Lease Area OCS-A 0517 consisting of 13,700 acres. Consequently, Lease Area OCS-A 0486 was reduced in size from 97,498 to 83,798 acres.

The proposed Revolution Wind project is subject to CRMC federal consistency review authority pursuant to Section 307 of the Coastal Zone Management Act (“CZMA”), 16 U.S.C. § 1451 *et seq.* and the CZMA’s implementing regulations at 15 C.F.R. part 930, subpart E - Consistency for Outer Continental Shelf (OCS) Exploration, Development and Production Activities. The CRMC CZMA review period for the Revolution Wind project commenced on August 6, 2021.² And, on October 21, 2021 the CRMC issued its 3-month CZMA review status letter for the Revolution Wind project as required by 15 C.F.R. § 930.78(a). The CRMC and Revolution Wind, LLC agreed to an initial stay agreement that began on October 29, 2021, ended September 17, 2022 (96 days of the 6-month review period preserved), and provided for a CRMC consistency decision due by December 21, 2022. This first stay agreement has ended; however, the parties have mutually agreed to a second stay of the CRMC CZMA six-month federal consistency review period as specified in the attached stay agreement executed November 17, 2022. **Pursuant to the agreement, the CRMC federal consistency decision in this matter is now due no later than February 24, 2023.**

The purpose of this letter is to notify the Bureau of Ocean Energy Management of this stay agreement pursuant to the requirements of 15 C.F.R. § 930.60(b). In addition, the CRMC requests BOEM to not issue a license or permit to Revolution Wind, LLC until the requirements of 15 C.F.R. Part 930, Subpart E have been completely satisfied. The CRMC will promptly notify BOEM when it issues a federal consistency decision in this matter.

Please contact me at 401-783-3370 or email jwillis@crmc.ri.gov should you have any questions.

Sincerely,


Jeffrey M. Willis, Executive Director
Coastal Resources Management Council

/lat

cc Kellen Ingalls, Project Development Director, Revolution Wind, LLC
Megan Eakin, Permit Manager, Revolution Wind, LLC
David Kaiser, NOAA
Allison Castellan, NOAA
CRMC Members
Anthony DeSisto, Esq., CRMC Legal Counsel

² By letter dated August 18, 2021 the CRMC notified BOEM, Revolution Wind, LLC and NOAA that the CRMC CZMA review period commenced on August 6, 2021.



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SECOND AGREEMENT TO STAY SIX-MONTH REVIEW PERIOD

Between

Rhode Island Coastal Resources Management Council

And

Revolution Wind, LLC

The Rhode Island Coastal Resources Management Council, hereinafter referred to as the “CRMC,” and Revolution Wind¹, LLC, hereinafter referred to as “Revolution Wind,” hereby agree as follows.

Pursuant to 15 CFR § 930.76, Revolution Wind filed a federal consistency certification with the CRMC on June 7, 2021 for the proposed construction and operation of a wind energy project on the outer continental shelf (OCS), known as Revolution Wind, consisting of up to 100 wind turbine generators and an export cable that will enter Rhode Island state waters and make landfall at North Kingstown, RI. The Revolution Wind project has been assigned CRMC File 2021-06-029 and is identified on the Federal docket as BOEM-2021-0029. The proposed wind turbine generators will be located within BOEM Lease Area OCS-A 0486 and approximately 16 nautical miles southeast of Point Judith, Narragansett, Rhode Island. The proposed project is subject to CRMC federal consistency review pursuant to Section 307 of the Coastal Zone Management Act (CZMA), and the CZMA’s implementing regulations at 15 C.F.R. Part 930, Subpart E – Consistency for Outer Continental Shelf (OCS) Exploration, Development and Production Activities.

¹ Revolution Wind, LLC is a 50/50 joint venture between Ørsted and Eversource Investment LLC.

The CRMC’s CZMA six-month review period for the Revolution Wind project began on August 6, 2021.² The CRMC issued its 3-month letter to Revolution Wind on October 21, 2021 pursuant to the requirements of 15 C.F.R. § 930.78(a). In that letter the CRMC detailed specific information requirements that Revolution Wind has been requested to provide to the CRMC in order to complete the CRMC’s federal consistency review pursuant to its enforceable policies. Revolution Wind wants to confer with CRMC about the information that it seeks in the 3-month letter issued pursuant to 15 C.F.R. § 930.78(a). Revolution Wind identifies within its COP at Section 1.4.1.2 that the CRMC federal consistency decision for the project is anticipated between Q1 and Q3 2023. In addition, BOEM issued its Notice of Availability for the Draft Environmental Impact Statement (DEIS) in September 2022, and there is considerable information that CRMC believes is valuable to CRMC’s decision making process within the DEIS, including the range of expected project alternatives. And, CRMC’s review of the DEIS is supported by BOEM’s statement within the DEIS for the South Fork Wind project (BOEM Docket 2020–0066) in that “Cooperating agencies would rely on the DEIS to support their decision making and to determine if the analysis is sufficient to support their decision” (Emphasis added). *See* DEIS at i. State CZMA agencies are cooperating agencies under the BOEM renewable energy NEPA process.

In accordance with 15 CFR § 930.60(b), and in consideration of the parties’ mutual interest that the State have additional time to fully assess the proposed project’s consistency with the State’s enforceable policies, the CRMC and Revolution Wind mutually agree to the following dates and to stay the CRMC CZMA six-month review period as specified herein.

First Stay Agreement:

- Date the CRMC 6-month review period commenced: August 6, 2021
- Date the 6-month review period was to end: February 6, 2022
- Date during the 6-month review period that the stay begins: October 29, 2021
- Date that the stay ends: September 17, 2022
(96 days remaining in the 6-month review period)
- Date the 6-month review period ends and the CRMC consistency decision is due: December 21, 2022

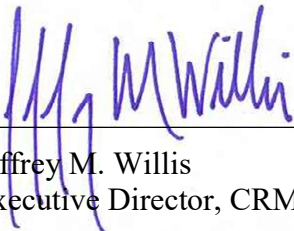
² The CRMC notified BOEM and Revolution Wind in a letter dated August 18, 2021 that commencement of the CRMC CZMA consistency review for the Revolution Wind project began on August 6, 2021.

Second Stay Agreement:

- Date during the 6-month review period that the stay begins: November 17, 2022
- Date that the stay ends: January 20, 2023
(35 days remaining in the 6-month review period)
- Date the 6-month review period ends and the CRMC consistency decision is due: February 24, 2023

The CRMC will issue its federal consistency decision on or before **February 24, 2023** unless Revolution Wind and CRMC mutually agree in writing to another later date. Furthermore, should the CRMC conclude its CZMA review earlier than anticipated by this agreement, then the CRMC will issue its federal consistency decision at the earliest possible time prior to February 24, 2023

This agreement made and entered by:



Jeffrey M. Willis
Executive Director, CRMC

17 November 2022
Date

North East Offshore, LLC
by its agent,
Ørsted Wind Power North America LLC



Kellen Ingalls, Authorized Person

17 November 2022
Date

cc BOEM
NOAA OCM
CRMC Council members



State of Rhode Island
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 3
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October 29, 2021

Amanda Lefton, Director
Bureau of Ocean Energy Management
45600 Woodland Road
Sterling, Virginia 20166

James Bennett, Renewable Energy Program Manager
Bureau of Ocean Energy Management
45600 Woodland Road
Sterling, Virginia 20166

Re: Revolution Wind, LLC; Docket No. BOEM-2021-0029
CRMC File 2021-06-029

Dear Ms. Lefton and Mr. Bennett,

Pursuant to 15 C.F.R. § 930.76, Revolution Wind, LLC on June 7, 2021 filed with the Rhode Island Coastal Resources Management Council (“CRMC”) a federal consistency certification for the proposed construction and operation of the Revolution Wind offshore wind renewable energy project consisting of up to one hundred (100) wind turbines located in federal waters on the Outer Continental Shelf (“OCS”) approximately 13 nautical miles east of Block Island, RI within BOEM Lease Area OCS-A 0486¹. The Revolution Wind project also includes up to two offshore substations, an inter-array submarine cable network and two submarine export cables co-located within a single corridor to be installed within federal and Rhode Island state waters with a landfall location planned at the Quonset Point Business Park in North Kingston, RI via the West Passage of Narragansett Bay. The Revolution Wind project will deliver 704 megawatts (MW) of offshore wind-generated electricity by way of contractual obligations to Rhode Island (400 MW) and Connecticut (304 MW).

¹ BOEM approved on March 23, 2020 the assignment of a portion of Lease Area OCS-A 0486 to South Fork Wind, LLC creating new Lease Area OCS-A 0517 consisting of 13,700 acres. Consequently, Lease Area OCS-A 0486 was reduced in size from 97,498 to 83,798 acres.

The proposed Revolution Wind project is subject to CRMC federal consistency review authority pursuant to Section 307 of the Coastal Zone Management Act (“CZMA”), 16 U.S.C. § 1451 *et seq.* and the CZMA’s implementing regulations at 15 C.F.R. part 930, subpart E - Consistency for Outer Continental Shelf (OCS) Exploration, Development and Production Activities. The CRMC CZMA review period for the Revolution Wind project commenced on August 6, 2021². And, on October 21, 2021 the CRMC issued its 3-month CZMA review status letter for the Revolution Wind project as required by 15 C.F.R. § 930.78(a). The CRMC and Revolution Wind, LLC have mutually have agreed to stay the CRMC CZMA six-month federal consistency review period as specified in the attached stay agreement executed yesterday, October 28, 2021. **Pursuant to the agreement, the CRMC federal consistency decision in this matter is now due no later than December 21, 2022.**

The purpose of this letter is to notify the Bureau of Ocean Energy Management of this stay agreement pursuant to the requirements of 15 C.F.R. § 930.60(b). In addition, the CRMC requests BOEM to not issue a license or permit to Revolution Wind, LLC until the requirements of 15 C.F.R. Part 930, Subpart E have been completely satisfied. The CRMC will promptly notify BOEM when it issues a federal consistency decision in this matter.

Please contact me at 401-783-3370 or email jwillis@crmc.ri.gov should you have any questions.

Sincerely,



Jeffrey M. Willis, Executive Director
Coastal Resources Management Council

/lat

cc: Mark Roll, Project Manager, Revolution Wind, LLC
David Kaiser, NOAA
Allison Castellan, NOAA
CRMC Members
Anthony DeSisto, Esq., CRMC Legal Counsel

² By letter dated August 18, 2021 the CRMC notified BOEM, Revolution Wind, LLC and NOAA that the CRMC CZMA review period commenced on August 6, 2021.



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AGREEMENT TO STAY SIX-MONTH REVIEW PERIOD

Between

Rhode Island Coastal Resources Management Council

And

Revolution Wind, LLC

The Rhode Island Coastal Resources Management Council, hereinafter referred to as the “CRMC,” and Revolution Wind¹, LLC, hereinafter referred to as “Revolution Wind,” hereby agree as follows.

Pursuant to 15 CFR § 930.76, Revolution Wind filed a federal consistency certification with the CRMC on June 7, 2021 for the proposed construction and operation of a wind energy project on the outer continental shelf (OCS), known as Revolution Wind, consisting of up to 100 wind turbine generators and an export cable that will enter Rhode Island state waters and make landfall at North Kingstown, RI. The Revolution Wind project has been assigned CRMC File 2021-06-029 and is identified on the Federal docket as BOEM-2021-0029. The proposed wind turbine generators will be located within BOEM Lease Area OCS-A 0486 and approximately 16 nautical miles southeast of Point Judith, Narragansett, Rhode Island. The proposed project is subject to CRMC federal consistency review pursuant to Section 307 of the Coastal Zone Management Act (CZMA), and the CZMA’s implementing regulations at 15 C.F.R. Part 930, Subpart E – Consistency for Outer Continental Shelf (OCS) Exploration, Development and Production Activities.

¹ Revolution Wind, LLC is a 50/50 joint venture between Ørsted and Eversource Investment LLC.

The CRMC’s CZMA six-month review period for the Revolution Wind project began on August 6, 2021². The CRMC issued its 3-month letter to Revolution Wind on October 21, 2021 pursuant to the requirements of 15 C.F.R. § 930.78(a). In that letter the CRMC detailed specific information requirements that Revolution Wind has been requested to provide to the CRMC in order to complete the CRMC’s federal consistency review pursuant to its enforceable policies. Revolution Wind wants to confer with CRMC about the information that it seeks in the 3-month letter issued pursuant to 15 C.F.R. § 930.78(a). Revolution Wind identifies within its COP at Section 1.4.1.2 that the CRMC federal consistency decision for the project is anticipated between Q1 and Q3 2023. In addition, BOEM anticipates issuing a Notice of Availability for the Draft Environmental Impact Statement (DEIS) on or about July 1, 2022, and the CRMC expects that there will be considerable information that will be valuable to its decision making process within the DEIS, including the range of expected project alternatives. And, CRMC’s review of the DEIS is supported by BOEM’s statement within the DEIS for the South Fork Wind project (BOEM Docket 2020–0066) in that “Cooperating agencies would rely on the DEIS to support their decision making and to determine if the analysis is sufficient to support their decision” (Emphasis added). *See* DEIS at i. State CZMA agencies are cooperating agencies under the BOEM renewable energy NEPA process.

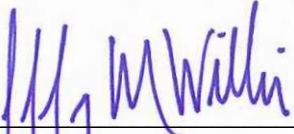
In accordance with 15 CFR § 930.60(b), and in consideration of the parties’ mutual interest that the State have additional time to fully assess the proposed project’s consistency with the State’s enforceable policies, the CRMC and Revolution Wind mutually agree to the following dates and to stay the CRMC CZMA six-month review period as specified herein.

- Date the CRMC 6-month review period commenced: August 6, 2021
- Date the 6-month review period was to end: February 6, 2022
- Date during the 6-month review period that the stay begins: October 29, 2021
- Date that the stay ends: September 17, 2022
(96 days remaining in the 6-month review period)
- Date the 6-month review period ends and the CRMC consistency decision is due: December 21, 2022

² The CRMC notified BOEM and Revolution Wind in a letter dated August 18, 2021 that commencement of the CRMC CZMA consistency review for the Revolution Wind project began on August 6, 2021.

The CRMC will issue its federal consistency decision on or before **December 21, 2022** unless Revolution Wind and CRMC mutually agree in writing to another later date. Furthermore, should the CRMC conclude its CZMA review earlier than anticipated by this agreement, then the CRMC will issue its federal consistency decision at the earliest possible time prior to December 21, 2022.


This agreement made and entered by:



Jeffrey M. Willis
Executive Director, CRMC

October 28, 2021
Date

North East Offshore, LLC
by its agent,
Ørsted Wind Power North America LLC



Francis Slingsby, Authorized Person

October 28, 2021
Date



Kellen Ingalls, Authorized Person

October 28, 2021
Date

cc BOEM
NOAA OCM
CRMC Council members

**Appendix 5 – RI CRMC Draft Environmental Impact Statement
Comments**



State of Rhode Island
Coastal Resources Management Council
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October 17, 2022

Ms. Michelle Morin
Bureau of Ocean Energy Management 45600
Woodland Road
Sterling, Virginia 20166

Re: Docket No. BOEM-2022-0045
Comments for the Notice of Availability of the Draft Environmental Impact Statement (DEIS) for the Construction and Operation Plan for Revolution Wind, LLC's Proposed Wind Energy Facilities Offshore Rhode Island

Dear Ms. Morin,

We have reviewed the September 2, 2022, Federal Register Notice of Availability (NOA) of the Draft Environmental Impact Statement (DEIS) for the construction and operation plan (COP) submitted by Revolution Wind, LLC (Revolution Wind) of its proposed Revolution Wind Offshore Wind Farm Project (Project) offshore Rhode Island within the Bureau of Ocean Energy Management (BOEM) Renewable Energy Lease Area OCS-A 0486. This letter responds to your request for comments during the public review and comment period regarding the DEIS analysis on potential environmental impacts of the Project and alternatives to the proposed action.

The Revolution Wind Project is located within the CRMC's 2011 and 2018 Geographic Location Description (GLD) areas and is subject to CRMC federal consistency authority pursuant to the Federal Coastal Zone Management Act (CZMA)) at 16 USC § 1456(c)(3)(A) and the CZMA's implementing regulations at 15 CFR Part 930, Subpart D - Consistency for Activities Requiring a Federal License or Permit and Subpart E - Consistency for Outer Continental Shelf (OCS) Exploration, Development and Production Activities. Additionally, the portion of the Project's offshore export cable that is proposed to travel from federal waters into Rhode Island state waters is subject to Rhode Island state regulation.

The Revolution Wind Farm would include up to 100 wind turbine generators (WTGs) connected by a network of inter-array cables (IACs), up to two offshore substations (OSSs) connected by one offshore substation link cable (OSS-link cable), and one onshore logistics or O&M facility. The RWEC would include up to two alternating current (AC) electric cables (export cables) generally co-located within a single corridor; one onshore substation (OnSS); and

one interconnection facility (ICF) that would connect the wind farm to the existing onshore regional electric transmission grid at The Narragansett Electric Company d/b/a National Grid (TNEC) Davisville Substation in North Kingstown, Rhode Island.

The CRMC offers the following comments regarding the Projects impacts on Rhode Island coastal resources and users.

Reduce the number of WTG positions to the amount necessary to meet existing Purchase Power Agreements (PPAs)

The final approval of the Project should limit the number of WTG positions to the number needed to meet current PPA obligations so to reduce the overall footprint and impacts from the construction, operation and maintenance, and decommissioning of the Project. The Proposed Action would include 100 WTG positions with the capacity to deliver 880MW of offshore wind renewable energy. However, the Project currently has three PPAs totaling 704MWs: 200MW with the State of Connecticut, 400MW with the State of Rhode Island, and an additional 104MW with the State of Connecticut. *See* DEIS at ES-2. Thus, if the project were to utilize 11MW WTGs, only 64 WTG positions would be necessary to fulfill the 704MW PPA and 36 WTG positions could be eliminated. Eliminating 36 positions would allow for greater flexibility in siting WTGs to avoid fragile habitat and resources and reduce user conflicts that would result from the Proposed Action.

Reduce impacts to complex benthic habitat, namely Cox Ledge, to the greatest extent practicable

As noted in the DEIS, a large portion of the project area includes complex benthic habitat known as Cox Ledge. This area plays host to a wide range of marine resources which rely on the unique and complex glacial moraine habitat for feeding, spawning, and development at various developmental stages. As noted by the National Marine Fisheries Service (NMFS) June 2021 scoping comments for the NOI to prepare an EIS for the Revolution Wind Project, Cox Ledge “is known to support spawning aggregations of Atlantic cod.” *See* NMFS Scoping Comments, June 2021. NMFS went on to express their concern regarding the impact any development of the area would have on Atlantic cod habitat and populations. *Id.*

The CRMC agrees with NMFS concerns regarding impacts to Cox Ledge and Atlantic cod habitat and builds on those comments to state a preference for a reduced number of WTG positions and a reduced inter array cable (IAC) footprint. The DEIS states that noise produced during impact-pile driving for WTG foundation installation will kill or damage eggs and larvae within 1,680 feet of the foundation. *See* DEIS at 3.6-40. Additionally, the recovery of the complex habitat which hosts these eggs and larvae will be long-term (i.e., two years to longer than the life of the project). *See* DEIS at 3.6-41 to 3.6-42. By reducing the number of turbine positions and footprint of IACs, these long-term impacts to the complex habitat and marine resources will be mitigated.

Impacts to commercial fisheries and for-hire recreational fisheries

Included in Rhode Island CRMC’s federally approved coastal management plan are enforceable policies used by the agency in its review of offshore renewable energy projects, including the Revolution Wind Project. Ocean SAMP § 11.10.1(H) and (I) state the enforceable

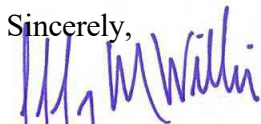
policies recognizing the importance of complex bottom habitat (i.e., glacial moraine) to the Rhode Island commercial and recreational fishing industries. *See* 650-RICR-20-00-11.10.1(H)-(I). The “finfish, shellfish, and crustacean species that are targeted by commercial and recreational fishermen rely on appropriate habitat at all stages of their lifecycles” and “spawning and nursery areas are especially important.” *Id.* As stated above, large portions of the Proposed Action is sited in complex habitat, and despite the DEIS stating impacts to benthic habitat as being moderate adverse and moderate beneficial, the likely large scale death of millions of eggs, larvae and invertebrate species from WTG and IAC installation/operation will have long-term adverse impacts on the Rhode Island fishing industry. *See* DEIS at ES-7. Fishermen will likely be displaced from the area due to reduced catch and additional user conflicts will result. The Proposed Action does not align with the CRMC’s enforceable policies regarding the protection of complex bottom habitat as it pertains to the commercial and recreational fishing industries. Minimizing the number of WTG positions in complex bottom habitat and reducing the footprint of IACs will aid in achieving this policy objective.

An inability to achieve proper cable burial depth of 4-6ft below the seabed in complex hard bottom areas will create a navigational hazard and expose fishermen and the wind developer to unnecessary conflict. As previously stated, a large portion of the Project area is sited in complex hard bottom seabed. Cable burial tools will likely face difficulty in achieving proper burial depth which may in-turn lead to an increased amount of secondary cable protection in the form of articulated concrete mattresses. These mattresses present new hangs for fishermen and will force marine users to avoid an area all together, risk losing/damaging fishing gear, or modify fishing practices to avoid new hangs and potentially reduce their ability to fish economically. For example, there are seven known cable crossings for the export cable and the export cable will cross IAC two to four times. *See* DEIS at 2-21. Each cable crossing could require up to 1,640feet of secondary cable protection meaning up to 18,040feet (approximately 3.45miles) of secondary cable protection could be used. *See* DEIS at 2-14. This does not include cable protection that may be used near WTG foundations and OSS foundations. The best option to avoid adverse impacts from secondary cable protection and avoid creating new hangs for fishermen is to ensure cable burial depth where possible, minimize the number of WTG positions in hard bottom seabed and reduce the footprint of IACs.

Conclusion

Thank you for the opportunity to provide comments on the NOA for the DEIS for the Revolution Wind Project. The CRMC supports the development of offshore renewable energy but firmly believes offshore development must be done in a responsible and equitable manner. The Proposed Action does not achieve either of these goals due to its long-term major adverse impacts to commercial fisheries and for-hire recreational fisheries and the vast adverse impacts to benthic habitats which are essential to Rhode Island marine users. The CRMC reiterates its belief that reducing the number of WTG positions to the those necessary to meet the current PPAs and reducing the footprint of IACs are essential in minimizing negative impacts.

Sincerely,



Jeffrey M. Willis, Executive Director

Coastal Resources Management Council

Appendix 6 – RI CRMC FAB Federal Consistency Memo



DESAUTEL LAW

MEMORANDUM

To: Jeffrey Willis, Executive Director, Coastal Resources Management Council

From: Desautel Law, on behalf of the Fishermen's Advisory Board

Date: December 29, 2022

Re: Review of Revolution Wind Federal Consistency Statements

The Coastal Resources Management Council ("CRMC") must issue a decision as to whether the portion the Revolution Wind project located in federal waters is consistent with the enforceable policies of the State's federally approved coastal zone management program. CRMC concurrence is required before the Bureau of Ocean Energy Management ("BOEM") may approve the Revolution Wind Construction and Operations Plan ("COP") (*See* 30 CFR 585.628(f)).

The regulatory standards contained within 650-RICR-20-05-11 are the enforceable policies for purposes of the Coastal Zone Management Act ("CZMA") federal consistency provisions, specifically Part 11.10.

Under this framework, the Fishermen's Advisory Board ("FAB") reviewed Revolution Wind Federal Consistency Statements and provides the following responses:

Enforceable Policy § 11.10.1(C): *Offshore Developments shall not have a **significant adverse impact on the natural resources or existing human uses** of the Rhode Island coastal zone, as described in the Ocean SAMP. In making the evaluation of the effect on human uses, the Council will determine, for example, if there is an overall net benefit to the Rhode Island marine economic sector from the development of the project or if there is an overall net loss. Where the Council determines that impacts on the natural resources or human uses of the Rhode Island coastal zone through the pre-construction, construction, operation, or decommissioning phases of a project constitute significant adverse effects not previously evaluated, the Council shall, through its permitting and enforcement authorities in state waters and through any subsequent CZMA federal consistency reviews, require that the applicant modify the proposal to avoid and/or mitigate the impacts or the Council shall deny the proposal. (Emphasis added).*

Applicant's response: The RWF and RWEC is consistent with this policy. The RWF and RWEC will not have significant adverse impact on the natural resources or human uses of the Ocean SAMP study area. It is expected that current activities will be able to continue post construction.

Why it falls short: It is clear that there will be significant adverse impacts from the proposed project. Some of those impacts are discussed below. Therefore, project modification and/or

mitigation measures are necessary. Given that fishing areas, glacial moraines, and associated sensitive marine habitat are located within the lease area, the FAB expects significant project modification and/or mitigation would be required. What is unclear, is what modifications or mitigation measures are necessary to address these impacts. Until project modification has occurred or adequate mitigation measures have been identified, the FAB recommends that CRMC find that the project is inconsistent with this Enforceable Policy.

In the COP, the Applicant states: “[d]ifferent impact-producing factors (IPFs) may result in varying levels of impact on commercial and recreational fisheries.” ... “IPFs that could (sic) commercial and recreational fisheries include seafloor disturbance, sediment suspension and deposition, habitat alteration, noise, traffic, visible structures, EMF, discharges and releases, and trash and debris.” *See* COP Appendix DD, Commercial and Recreational Fisheries Technical Report at p. 66.

“...during construction, O&M, and decommissioning of the RWF, finfish and EFH species with benthic/demersal life stages are expected to be exposed to direct impacts from noise associated with impact pile driving and/or vibratory pile driving of foundations, potential in-situ MEC/UXO disposal, other noise sources, seafloor disturbance, sediment suspension/deposition, and indirect impacts from habitat alteration. Finfish and EFH species with pelagic life stages are expected to be exposed to direct impacts from impact pile driving and/or vibratory pile driving, potential in-situ MEC/UXO disposal noise and other construction/decommissioning noise sources, and indirect impacts from habitat alteration. ...” *See* COP at p. 420.

“Potential long-term impacts may result from the conversion of soft-bottom habitat to hard-bottom habitat associated with the WTG foundations, scour protection, and secondary protection of the OSS-Link Cable and IAC.” *Id.*

Tables 3.1-1; 3.1-2, and 3.1-3 of the Applicant’s Category B Assent Application also listed Potential Impacts to Commercial and Recreational Fisheries from the RWF and RWEC. According to those tables:

Construction and Decommissioning:

Fishing activity will be temporarily restricted in the immediate area of seafloor preparation operations due to a short-term 500-yard-radius safety zone established around construction operations... the USCG will also provide moving safety zones centered on cable laying vessels.

Indirect impacts on fisheries may occur as a result of the impacts of seafloor preparation on fishery resources.

Impact pile driving and/or vibratory pile driving/foundation installation and/or associated scour protections (if necessary) will temporarily disrupt access to some fishing areas.

Direct impacts on commercial and recreational fisheries associated with the IAC and OSS-Link Cable installation are expected to result in similar negative impacts. Decommissioning activities are expected to cause similar impacts as construction.

In areas of sediment disturbance and/or increased sedimentation, benthic habitat recovery and benthic infaunal and epifaunal species abundances may take up to 1 to 3 years to recover to pre-impact levels, based on the results of a number of studies on benthic recovery.

During decommissioning, foundations and other facilities will be removed to a depth of 15 ft (4.6 m) below the mudline, unless otherwise authorized by BOEM (30 CFR § 585.910(a)). Recovery from decommissioning activities is expected to be similar that experienced during seafloor preparation, resulting in an indirect, long-term impact on commercial and recreational fisheries.

Seafloor-disturbing activities will result in temporary increases in sediment suspension and deposition and may result in indirect, short-term, limited impacts on fisheries due to impacts on fishery species that have preferred habitat in the RWF.

Potential impacts from noise on benthic and demersal species that are targeted by commercial and recreational fisheries may cause indirect, short-term impacts on the fisheries.

Commercial and recreational fisheries may experience short-term impacts due to increased vessel traffic during construction and decommissioning, as fisherman may avoid areas of increased vessel activity. Potential impacts on navigation are discussed in the Navigational Safety Risk Assessment (NRSA) (DNV GL, 2020).

Installation and decommissioning vessels and RWF components may affect fishing activity because there will be a minimum safety perimeter around installation and decommissioning vessels and locations where the RWF components will be installed and removed. This temporarily restricted area will consist of a 500-yard radius safety zone.

Operation and Maintenance:

Maintenance activities may result in direct, short-term impacts on fishing activity, as fishing access would be temporarily disrupted.

Fishery resources associated with soft-bottom habitats may experience long-term impacts, as available habitat will be slightly reduced.

Commercial fisheries that target species with limited mobility may have indirect, long-term impacts from the presence of the WTG foundations (due to the impact

on benthic and demersal species such as ocean quahog clam, Atlantic surfclam, and Atlantic sea scallop).

Increases in sediment suspension and deposition during the O&M will result from vessel anchoring and non-routine maintenance activities that require exposing the IAC and/or OSS-Link Cable.

The underwater noise levels produced by WTGs are expected to be within the hearing ranges of fish.

Noise from the WTGs is expected to have an indirect, long-term impact on commercial and recreational fisheries. Noises could cause avoidance of the RWF area for some fishery species or their prey, resulting in indirect impacts on commercial and recreational fisheries.

It is not expected that fishery resources will be measurably affected by EMF from the cables, and thus indirect impacts on commercial and recreational fisheries are not expected.

Cable corridors:

Impacts on commercial and recreational fisheries from seafloor preparation are primarily associated with short-term disruption of access to fishing areas for commercial and recreational fisheries.

Direct impacts on commercial and recreational fisheries associated with the RWEC installation/decommissioning are expected to result in similar negative impacts as those for seafloor preparation

Direct impacts on commercial and recreational fisheries associated with vessel anchoring (including spuds) are similar to those discussed in seafloor preparation.

In areas of sediment disturbance and/or increased sedimentation, benthic habitat recovery and benthic infaunal and epifaunal species abundances may take up to 1 to 3 years to recover to pre-impact levels, based on the results of a number of studies on benthic recovery.

Seafloor-disturbing activities will result in temporary increases in sediment suspension and deposition... Commercial fisheries that target species affected by sediment suspension and deposition may experience indirect, short-term impacts due to losses in productivity.

Presence of the cable protection may result in both negative and beneficial indirect impacts on commercial and recreational fisheries due to conversion of primarily soft-bottom habitat to hard-bottom habitat and the subsequent effects on fishery resources. The cable protection may have a long-term impact on fishery resources.

The National Oceanic and Atmospheric Administration (“NOAA”) has similarly indicated that there are potential impacts to marine species, commercial and recreational fishing, and support businesses including:

Loss/conversion of bottom habitat (i.e. resource distribution, productivity, or abundance changes);

Presence of structures (WTGs, substations, cables, scour protection); Displacement of fishing activities;

Gear conflicts;

Bycatch; Catch rates;

Fishing pressure on other locations;

Cumulative effects from past, present, and reasonably foreseeable future actions... including all 16 COPs BOEM recently announced it plans to process by 2025;

Socio-economic impacts on fishing communities that cannot relocate fishing activity, cost limitations (too expensive to travel to other fishing areas); cumulative impacts to habitat as well as target and bycatch species (both fish and protected species) that have not been previously analyzed...; and

“[M]ajor adverse impacts on NMFS Northeast Fisheries Science Center scientific surveys, which will, in turn, result in adverse impacts on fishery participants and communities, conservation and recovery of protected species, and on the American public. .” Reduced regional scientific survey access ... would result in increased uncertainty in the surveys’ measures of abundance, which could potentially lead to lower quotas for commercial and recreational fishermen and lower associated fishing revenue based on current fishery management council risk policies. These impacts will occur over the lifetime of wind energy operations at the project area and in the region (to at least 2050). *Id.* at 26.

“...page 282 of the COP incorrectly and misleadingly suggests that physical oceanography resources will not be impacted from visible structures despite information documenting the effects of turbines and scour protection, ocean circulation, and mixing, all of which have both direct and indirect impacts on marine resources and fishing operations.” *Id.* at 25.

“While the WTGs may create a reef effect, the [EIS] should clearly distinguish the difference between man-made structures and the natural complex habitat present in the project area. Specifically, artificial habitats are only a component of the EFH designation for two managed fish species (black sea bass and red hake) in the region.” *Id.*

“Under the Omnibus Essential Fish Habitat Amendment 21, the New England Fishery Management Council (NEFMC) has designated HAPC for juvenile cod in southern New England as far west as the Rhode Island Connecticut border from the mean high water line up to depths of 20 meters (m) to include rocky habitats (pebble, cobble, and boulder) with and without attached macroalgae or emergent epifauna, SAV, and sandy habitats adjacent to rocky or SAV habitats, which are used for foraging.” *Id.* at 5.

“The COP also identifies a number of complex habitats and benthic features along the cable route offshore and in the West Passage of Narragansett Bay, such as Brenton Reef and other rocky seafloor conditions and bedrock outcrops, as well as ripples, megaripples, and irregular seafloors.” *Id.*

“Such habitats in depths up to 20 m would be consistent with the cod HAPC and any potential impacts to these habitats should be fully evaluated. BOEM should consider an alternative that evaluates how cable installation and operation may impact these different habitats.” *Id.*

*Enforceable Policy §11.10.1(E): The Council shall prohibit any other uses or activities that would result in **significant long-term negative impacts** Rhode Island’s commercial or recreational fisheries. Long-term impacts are defined as those that affect more than one or two seasons. (Emphasis added).*

Applicant’s Response: The RWEC and RWF is consistent with this policy. DWW Rev I has conducted an assessment of commercial and recreational fisheries within the region, which encompasses the RWEC and RWF. The RWEC and RWF is not expected to have major long term impacts on commercial or recreational fisheries.

Why It Falls Short: According to the COP (see below), impacts of up to three (3) years are expected (see below). Since the project is expected to have such an impact, where avoidance is not possible, impacts should be minimized to the greatest extent possible, and mitigation measures should be identified. As the Applicant has indicated above that the project is not expected to have any impact, the FAB requests that CRMC find the project inconsistent with this policy.

According to the COP:

“Seafloor disturbance activities that result in the conversion of soft sediment habitats to hard bottom habitat associated with foundations, scour protection, and cable protection (e.g., concrete mattresses or rock berms) along portions of the OSS–Link Cable and IAC routes, are expected to have long-term beneficial impacts on benthic organisms that rely on complex, hard bottom habitats. Long-term impacts may occur as a result of habitat alteration, as benthic habitat recovery and benthic infaunal and epifaunal species abundances **may take up to 1 to 3 years to recover** to pre-impact levels in disturbed areas. Benthic species may experience long-term impacts caused by the conversion of soft bottom habitat to hard bottom habitat associated with foundations and associated scour protection, and cable

protection (e.g., concrete mattresses) along portions of the OSS-Link Cable and IAC routes.”
See COP at Pg 372.

“In areas of sediment disturbance, benthic habitat recovery and benthic infaunal and epifaunal species abundances **may take up to 1 to 3 years to recover** to pre- impact levels, based on the results of a number of studies on benthic recovery.” *Id.* at Pg 374, 377, 385. (citing e.g., AKRF, Inc. et al., 2012; Germano et al., 1994; Hirsch et al., 1978; Kenny and Rees, 1994).

“As discussed for the construction/decommissioning of the RWF, in areas of sediment disturbance benthic habitat recovery and benthic infaunal and epifaunal species abundances **may take up to 1 to 3 years to recover** to pre-impact levels, based on the results of a number of studies on benthic recovery.” *Id.* at p. 387.

Enforceable Policy §11.10.1 (F): *The Council shall require that the potential adverse impacts of Offshore Developments and other uses on commercial or recreational fisheries be evaluated, considered, and mitigated as described in Section 11.10.1(G) of this part. (Emphasis added).*

Applicant’s Response: The RWEC and RWF are consistent with this policy. DWW Rev I has conducted an assessment of commercial and recreational fisheries within the region, which encompasses the RWEC and RWF. The RWEC and the RWF are not expected to have major long term impacts on commercial or recreational fisheries and DWW Rev I is committed to collaborative science with the commercial and recreational fishing industries pre-, during, and post-construction.

Why It Falls Short: Despite the Applicant’s response, there are several potential adverse impacts that have been identified by the Applicant and others (*See* Enforceable Policy §11.10.1(C) discussion above). According to this Enforceable Policy, impacts to commercial and recreational fisheries must be addressed. Based on the Applicant’s response, such impacts have not been acknowledged. Until such time as these impacts have been properly evaluated, considered and/or mitigated, the FAB requests that the CRMC find the project is inconsistent with this policy.

Enforceable Policy §11.10.1 (G): *For the purposes of fisheries policies and standards as summarized in Ocean SAMP Chapter 5, Commercial and Recreational Fisheries, §§ 5.3.1 and 5.3.2 of this Subchapter, mitigation is defined as a process to make whole those fisheries user groups, including related shore-side seafood processing facilities, that are adversely affected by offshore development proposals or projects. **Mitigation measures** shall be consistent with the purposes of duly adopted fisheries management plans, programs, strategies and regulations of the agencies and regulatory bodies with jurisdiction over commercial and recreational fisheries, including but not limited to those set forth above in § 11.9.4(B) of this Part. Mitigation shall not be designed or implemented in a manner that substantially diminishes the effectiveness of duly adopted fisheries management programs. Mitigation measures may include, but are not limited to, compensation, effort reduction, habitat preservation, restoration and construction, marketing, and infrastructure and commercial fishing fleet improvements. Where there are potential impacts associated with proposed projects, the need for mitigation shall be presumed (see § 11.10.1(F) of*

this Part). Mitigation shall be negotiated between the Council staff, the FAB, the project developer, and approved by the Council. The final mitigation will be the mitigation required by the CRMC and included in the CRMC's Assent for the project or, included within the CRMC's federal consistency decision for a project's federal permit application. (Emphasis added).

Applicant's Response: The RWEC and RWF are consistent with this policy. DWW Rev I has conducted an assessment of commercial and recreational fisheries within the region, which encompasses the RWEC and RWF. The RWEC and RWF are not expected to have major long term impacts on commercial or recreational fisheries and DWW Rev I is committed to collaborative science with the commercial and recreational fishing industries pre-, during, and post-construction. The Project's Fisheries Communication and Outreach Plan summarizes the outreach conducted and includes a Fishing Gear Conflict Prevention and Compensation Plan that identifies measures to Prevent gear loss, as well as a claim procedure in the event that gear loss is caused by RWEC and RWF activities.

Why It Falls Short: There are potential impacts associated with proposed project (*See Enforceable Policy §11.10.1(C) discussion above*). Based on these impacts, mitigation measures are required. Until such time as these impacts have been properly evaluated, considered and/or mitigated, the FAB requests that the CRMC find the project is inconsistent with this policy.

Enforceable Policy §11.10.1 (H): *The Council recognizes that **moraine edges**, as illustrated in Figures 3 and 4 in § 11.10.2 of this Part, are important to commercial and recreational fishermen. In addition to these mapped areas, the FAB may identify other edge areas that are important to fisheries within a proposed project location. The Council shall consider the potential adverse impacts of future activities or projects on these areas to Rhode Island's commercial and recreational fisheries. Where it is determined that there is a significant adverse impact, the Council will modify or deny activities that would impact these areas. In addition, the Council will require assent holders for offshore developments to employ micro-siting techniques in order to minimize the potential impacts of such projects on these edge areas. (Emphasis added).*

Applicant's Response: the RWF and REC is consistent with this policy. The RWEC [and RWF] has been sited to avoid and minimize impacts to areas of particular concern, including moraine edges. When avoidance is not possible, protection measures will be employed to avoid to minimize impact to any moraine edges.

Why it falls short: CRMC Correspondence to BOEM dated May 21, 2021, at Pg. 2 states "Given that the purpose and need for the Revolution Wind project is to provide 704 MW, it stands to reason that should the 12 MW WTG be selected and installed, then only 59 WTGs are required..."and "...the developer has a feasible alternative to avoid turbine foundation and inter-array cables within glacial moraine and further reduce impacts within the project area by reducing the overall number of turbine foundations from 100 to less than 60..."

The current proposal is for 79 turbines (previously 100 turbines), based on this the Applicant has not demonstrated that adequate management/mitigation measures have been implemented. It is the FAB's position that if approval is being sought for more turbines than necessary, the impacts

are not minimized. Additional turbines in important habitat and glacial moraine areas should be removed.

It is the FAB's understanding that the Applicant has not yet completed the final siting of the project. Therefore, the location of project components is still pending. Because of this, the FAB is prevented from commenting fully. It is the FAB's position that until such time as final siting of project components is provided, CRMC cannot make a finding that the project is federally consistent.

Where project components must be in sensitive areas, there must be adequate mitigation to address such impacts. Without any acknowledgement by the Applicant, in this Enforceable Policy discussion or others, that there are any impacts, mitigation is impossible. At a minimum, there needs to be a construction schedule that limits impacts to fisheries and fishing activity; adequate cable burial depths; and more information on the use of concrete mattresses. FAB needs the Applicant to identify effects to habitat and fisheries and describe how they will minimize such effects. Until such time as habitat and fisheries mitigation has been acknowledged and considered, the FAB requests that CRMC find the project is inconsistent with this policy.

***Enforceable Policy §11.10.1 (I):** The finfish, shellfish, and crustacean species that are targeted by commercial and recreational fishermen rely on appropriate habitat at all stages of their **life cycles**. While all **fish habitat** is important, **spawning and nursery areas** are especially important in providing shelter for these species during the most vulnerable stages of their life cycles. The Council shall protect sensitive habitat areas where they have been identified through the Site Assessment Plan or Construction and Operation Plan review processes for offshore developments as described in § 11.10.5(C) of this Part. (Emphasis added).*

Applicant's Response: The RWF and RWEC is consistent with this policy. DWW Rev I has conducted an assessment of commercial and recreational fisheries within the region, which encompasses the RWF [and RWEC]. The RWF is not expected to have major long term impacts on commercial or recreational fisheries and DWW Rev I is committed to collaborative science with the commercial and recreational fishing industries pre-, during, and post-construction.

Why it falls Short: The project's location on Cox Ledge means that a substantial portion of the proposed development overlapping with hard bottom complex habitat that is Essential Fish Habitat ("EFH") for a number of species. Other project alternatives must be considered and mitigation measures identified in an effort to protect this resource. Cox Ledge is spawning area for Atlantic Cod between **November and April**, which can be easily disturbed by in-water activities. Disruptions to spawning aggregations may affect reproductive success, which could result in significant long-term effects to the stock. See NOAA Correspondence to BOEM, June 1, 2021.

NOAA has also voiced objection to the impacts to Cox Ledge as it is: "an important area for fishing activity, and any adverse impacts to fish habitat or recruitment of economically valuable species may result in subsequent impacts on commercial and recreational fishing opportunities and associated communities." and "We remain concerned with construction within this unique area and expect some areas within the lease may not be appropriate for development." *Id.*

The Applicant states only that the RWF will not have major long term impacts. This is incorrect. The Applicant must provide a project alternative and construction schedule that seeks to minimize effects on complex habitats. This information must be provided, and mitigation measures identified, before CRMC can find that the project is consistent.

There is new research that suggests wind turbines have effects on the distribution of phytoplankton and therefore cause major long-term effects on the ecosystem.

NOAA has indicated that the following species have designated EFH in the project area:

Atlantic cod (*Gadus morhua*),
ocean pout (*Zoarces americanus*), summer flounder
(*Paralichthys dentatus*), pollock (*Pollachius virens*),
silver hake (*Merluccius bilinearis*),
winter flounder (*Pseudopleuronectes americanus*), Northern
longfin squid (*Doryteuthis pealii*), winter skate (*Leucoraja*
ocellata),
little skate (*Leucoraja erinacea*),
windowpane flounder (*Scophthalmus aquosus*), bluefish
(*Pomatomus saltatrix*),
black sea bass (*Centropristis striata*), red hake
(*Urophycis chuss*),
scup (*Stenotomus chrysops*),
yellowtail flounder (*Limanda ferruginea*),
Atlantic sea scallop (*Placopecten magellanicus*), and Atlantic
surfclam (*Spisula solidissima*).

The proposed project area is also designated EFH for several Atlantic highly migratory species (tuna, swordfish, billfish, small and large coastal sharks, and pelagic sharks) including, but not limited to, Atlantic angel shark (*Squatina dumeril*), blue shark (*Prionace glauca*), bluefin tuna (*Thunnus thynnus*) sandbar shark (*Carcharhinus plumbeus*) and sand tiger shark (*Carcharias taurus*). The sand tiger shark has been listed as a Species of Concern by NOAA. As mentioned above, a portion of the project area is also designated as a Habitat Areas of Particular Concern (HAPC) for juvenile cod.

NOAA has indicated “[t]he following listed species may be found in the Revolution Wind lease area: Endangered North Atlantic right (*Eubalaena glacialis*), fin (*Balaenoptera physalus*), sei (*Balaenoptera borealis*), and sperm (*Physeter macrocephalus*) whales; endangered Kemp’s ridley (*Lepidochelys kempii*) and leatherback (*Dermochelys coriacea*) sea turtles; threatened North Atlantic distinct population segment (DPS) of green (*Chelonia mydas*) sea turtles and Northwest Atlantic DPS of loggerhead (*Caretta caretta*) sea turtles; and five DPSs of Atlantic sturgeon (*Acipenser oxyrinchus oxyrinchus*). Sea turtles are present in the lease area seasonally, with occurrence largely limited to May - November. Additionally, oceanic whitetip shark (*Carcharhinus longimanus*) and giant manta ray (*Manta birostris*) may occasionally occur in the more offshore portions of the project area.”

In 2021 NOAA recommended that BOEM “consider requiring the development of minimization and monitoring measures that minimize the risk of exposure to potentially harassing or injurious levels of noise to marine mammals, sea turtles, and Atlantic sturgeon.”

See NOAA Correspondence to BOEM, June 1, 2021.

CRMC staff previously found during review of the South Fork project that the project location on Cox Ledge was not desirable. “...the location of the SFW project on Cox Ledge, an area known for its biological diversity, is in our view one of the worst possible locations within Rhode Island Sound for this project.” See South Fork Wind, CRMC Staff Summary and Recommendations; Federal Consistency, CRMC File 2018-10-082, at p. 11.

Enforceable Policy § 11.10.2(C)(3): Glacial moraines are important habitat areas for a diversity of fish and other marine plants and animals because of their relative structural permanence and structural complexity. Glacial moraines create a unique bottom topography that allows for habitat diversity and complexity, which allows for species diversity in these areas and creates environments that exhibit some of the highest biodiversity within the entire Ocean SAMP area. The Council also recognizes that because glacial moraines contain valuable habitats for fish and other marine life, they are also important to commercial and recreational fishermen. Accordingly, the Council shall designate glacial moraines as identified in Figures 3 and 4 in §. 11.10.2 of this Part as Areas of Particular Concern. (Emphasis added).

Applicant’s Response: The RWEC and RWF are consistent with this policy. The RWEC and RWF has been sited to avoid areas of particular concern. When avoidance is not possible, protection measures will be employed to avoid to minimize impact to glacial moraines.

Why it Falls Short: The developer has failed to identify adequate mitigation measures. The Applicant’s response is that the project was sited to avoid APCs. This needs clarification as portions of the project are sited in glacial moraine areas. Construction, operations, maintenance and decommissioning in such areas will result in long-term or permanent adverse impacts to habitats, and the fisheries dependent on these habitats, and therefore will negatively impact both Rhode Island fisheries and onshore communities.

The FAB asserts that proposed project areas containing glacial moraines require more robust management measures. The FAB requests that the Applicant demonstrate sufficient measures to mitigate impacts to the glacial moraine habitat affected. Until such time as this is done, the FAB requests that CRMC find the project inconsistent with this policy.

Enforceable Policy §11.10.2 (C)(5): Areas of particular concern that have been identified in the Ocean SAMP area in state waters are described as follows: Areas of high fishing activity as identified during the pre-application process by the Fishermen’s Advisory Board, as defined in section 11.3(E) of this part, may be designated by the Council as Areas of Particular Concern. (Emphasis added).

Applicant's Response: The RWEC and RWF are consistent with this policy. The RWF and RWEC has been sited to avoid Areas of high fishing activity. The RWF is not expected to have major long-term impacts on fishing it is expected that fishing will continue after construction.

Why it Falls Short: The FAB respectfully disagrees. The RWF will have major long term impacts on fishing activity. While not all inclusive, the following impacts are of particular concern to the FAB:

Fishing area restrictions and fish avoidance during construction. “pile driving and other construction noise could cause some offshore boaters and recreational fishers to avoid areas of noise-generating activity... developers. Additionally, because some fish species are sensitive to underwater sound, construction noise could cause fish to move away from the noise source, which could adversely affect recreational fishing opportunities near work areas.” *See* Draft EIS at p. 3.18-6).

Relocation of boulders. The project will require the relocation of boulders both in the turbine area and along the proposed cable route. Some of these boulders are currently part of the glacial moraine and therefore part of the critical habitat. Disturbance and relocation of these boulders will change and likely permanently degrade the value of this critical habitat. The Applicant has not completed an analysis of the potential impact of this boulder relocation activity.

Gear Loss and Business Interruption. (“[S]cour protection for cables and foundations could hinder boat anchoring and result in gear entanglement or loss if recreational activity coincides with scour protection areas. If project- related seafloor hazards are not noted on charts, operators could lose anchors, leading to increased risks associated with drifting vessels that are not securely anchored.” *See* Draft EIS at p. 3.18-5).

Impacts from Structures. In addition to navigation concerns with the windfarm area, the BOEM has indicated that “results of the HDM study clearly reveal that introduction of the OSW structures into the Massachusetts-Rhode Island offshore area modifies the oceanic responses of current magnitude, temperature, and wave heights by 1) reducing the current magnitude through added flow resistance, 2) influencing the temperature stratification by introducing additional mixing, 3) reducing current magnitude and wave height by extracting of energy from the wind by the OSW turbines.” *See* BOEM, Hydrodynamic Modeling, Particle Tracking and Agent Based Modeling of Larvae in the U.S. Mid-Atlantic Bight, June 2021.

Placement of monopile structures has been shown to cause long term sediment resuspension due to currents moving past the monopiles. The resulting plumes of turbid water down-current from the structures may cause impacts. No analysis of such potential turbidity plumes or the effects on fish and invertebrate species has been presented by the developer. Such turbidity plumes could have a long-term impact on both recreational and commercial fisheries.

Increased risks of fishing and navigation which will increase insurance premiums for commercial vessels.

Impact to radar. “The presence of the WTGs for the duration of the O&M phase may interfere with the operation of the thirteen HF radar stations in the region.” *See* COP at p. 727. “Other radar effects include a partial loss of weather detection and false weather indications over and in the immediate vicinity of wind turbines within the line of sight in the study area.” *See* Draft EIS at p. 3.17-25.

“BOEM’s (2020) study of radar interference concludes that HF SeaSonde radars, which monitor ocean currents, follow oil spills, and track powered and adrift vessels, are the most heavily impacted radar by offshore wind projects because WTGs create a phenomenon in which turbine echo is processed by these radar as current echo, resulting in interference with ocean current measurements.” *Id.* at p. 3.17-26.

The presence of “structures would increase the long-term risk of radar interference or clutter.” *Id.* at 3.17-27.

Impacts from EMF, heat and elevated noise during operations.

Habitat loss due to project construction activities, construction schedule, and during operations due to the presence of project components in the leased area, especially in Cox Ledge.

Uncovering of the export cable.

Detonation of unexploded ordinances. The FAB requests a copy of COP Appendix G - MEC/UXO Risk Assessment with Risk Mitigation Strategy.

Lighting. “Construction of future planned offshore projects would require nighttime lighting on WTGs, vessels, and platforms that could be visible by ...offshore boaters recreating at night or in low-light conditions.” *See Id.* at p. 3.18-5.

Additional concerns for Recreational fisheries. The area of the RWF is proposed to occupy such areas that are known to be frequently used by recreational fishing. Neither the extent of such use, the value of such use nor the potential impacts to this existing use are quantified by the developer. (“Up to 10,148 acres of seafloor disturbance could occur from IAC and export cable installation within the recreation and tourism GAA ... As with anchoring, installation of offshore cables would temporarily increase navigation complexity for recreational vessels present around work areas and reduce recreational opportunities if individuals prefer to avoid the noise and disruption caused by installation.” *See* Draft EIS at Pg. 3.18-5).

The area of Cox Ledge and moraine bottom areas near Cox Ledge are the most important offshore fishing areas for Rhode Island anglers. The importance of moraine bottom areas

is well understood and this is why the CRMC designated glacial moraines in the Ocean SAMP as Areas of Particular Concern.

These areas are fished daily during three seasons of the year whenever weather permits because they are very productive areas and relatively close to recreational fishing ports in Rhode Island. This proximity to port makes the Revolution Wind and South Fork Wind areas particularly important to Rhode Island private recreational anglers.

If this fishing is somehow impacted, many of these anglers will not just go somewhere else in Rhode Island but more likely would either significantly change the fishing that they conduct, changing boats and/or marina, or move their boats to a different area. As an example, many anglers have moved their boats to Cape Cod Bay during years when fish are available there but not in Rhode Island waters.

Based on actual experience during the construction and operation of the Block Island Wind Farm project, and based on our review of the Revolution Wind project, there will likely be a total loss of fishing in the entire Cox Ledge area and surrounding areas during construction and demolition due to the very high level of activity and extreme noise production during monopile installation.

The loss during years of operations is much harder to quantify. Based on experience with the Block Island Wind Farm, the FAB agrees that there may be some additional fish aggregating around the new structure. However, in practice, those additional fish at the Block Island Wind Farm are primarily small black sea bass and small scup. Since the larger fish do not seem to be there as much as they were before, many anglers fish that area much less than prior to construction. If a similar phenomenon occurs, Rhode Island fishers may lose their best cod fishing ground available. Fishers will not travel 20 +/- miles to Cox Ledge to fish for black sea bass, so that area could be a significant loss for bottom fishing during all years of operation.

Construction schedule. The Inter-Array Cable (IAC) route clearance is scheduled to occur in **Q1 (January) 2024**. See Revolution Wind – Supplement to the Fisheries and Benthic Research Monitoring Plan at Pg. 4. This is concerning since Cox Ledge is spawning area for Atlantic Cod between **November and April**.

Cumulative Impacts. There has been insufficient discussion of the potential adverse impacts of future wind farm project activities in the area. This is especially concerning given the number of other wind farm projects that are pending. “BOEM estimates that a maximum cumulative total of up to 1,138 offshore WTGs and OSS foundations for the Proposed Action plus all other future offshore wind projects in the [Geographic Analysis Area].” See Revolution Wind Draft Environmental Impact Statement at p. 3.17-22.

Conclusion

The United States Congress recognized that “one of the greatest long-term threats to the viability of commercial and recreational fisheries is the continuing loss of marine, estuarine, and other aquatic habitats...” See NOAA Correspondence, June 1, 2021 at p. 20.

According to NOAA, “impacts to complex habitats, such as those found in the [Revolution Wind] project area, are known to result in long recovery times and are potentially permanent. Such impacts may result in cascading long term to permanent effects to species that rely on this area for spawning and nursery grounds and the fisheries and communities that target such species.” *Id.*

When the Revolution Wind project is considered alongside other future projects planned for this area, the impacts on commercial and recreational fisheries will be substantial.

The New England Fishery Management Council, in consultation with NOAA’s National Marine Fisheries Service, voted in June 2022 to establish a new Habitat Area of Particular Concern (“HAPC”) in and around the wind farm lease areas in Southern New England, including around Cox Ledge. The area of the designation is roughly 3,000 square miles. It spans all nine wind-energy lease areas in federal waters off Southern New England and includes a buffer zone. The stated purpose of the designation: “to provide additional conservation focus on important cod spawning grounds and areas of complex habitat within and adjacent to offshore development areas.” The designation was submitted to NOAA in August. See New England Fishery Management Council, press release entitled “Council Approves HAPC for Southern New England; Previews Northeast Regional Habitat Assessment Data Explorer; July 18, 2022; and Southern New England HAPC Preliminary Submission, August 22, 2022.

It is the FAB’s position that, given the impacts indicated above, the Applicant has failed to sufficiently demonstrate project consistency. The FAB therefore recommends that CRMC find the project is inconsistent with the CRMC’s Enforceable Policies.

Additional Documents Needed

COP Appendix G - MEC/UXO Risk Assessment with Risk Mitigation Strategy
Final Engineering analysis
Final project component location maps

Appendix 7 – Woods Hole Oceanographic Institution

Fisheries Exposure in Rhode Island
from the Revolution Wind Lease Area
and the Federal Waters Section of the Revolution Export Cable Route

Hauke Kite-Powell, Di Jin, and Michael Weir
Marine Policy Center
Woods Hole Oceanographic Institution

DRAFT 14 January 2023

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List of Abbreviations

COP – Construction and Operations Plan

ECC – Export Cable Corridor

ECR – Export Cable Route

ECR WA – Export Cable Route Working Area

ECRA – Export Cable Route Area

GDP – Gross Domestic Product

MA DMF – Massachusetts Division of Marine Fisheries

NEMFIS – Northeast Marine Fisheries Information System

NMFS – National Marine Fisheries Service

NOAA – National Oceanographic and Atmospheric Administration

PPI – Producer Price Index

RICRMC – Rhode Island Coastal Resources Management Council

RIDEM – Rhode Island Department of Environmental Management

RW – Revolution Wind

RWEC – Revolution Wind Export Cable

SBRM – Standardized Bycatch Reporting Methodology

VMS – Vessel Monitoring System

VTR – Vessel Trip Report

WLA – Wind Lease Area

WTGA – Wind Turbine Generator Area

Summary

Based on NOAA data from 2008 to 2019, and adjusting for underreporting of lobster and Jonah crab landings in the VTR data, and for some dockside sales of lobster and Jonah crab, we estimate the average annual value of commercial landings from the Revolution Wind Lease Area (WLA) to be \$1.51 million (2020\$), or \$4,510/ km²/year. Of this, \$827,000 is landed in Rhode Island. Including indirect and induced effects, these landings generate average annual economic impacts of \$1.70 million in Rhode Island.

As of early 2023, Revolution Wind has identified more than 20 of the WLA's 100 turbine tower locations as infeasible for development with current technology. These include the nine locations in the southwest corner of the lease area. We estimate that the average annual value of commercial landings in Rhode Island from the Wind Turbine Generator Area (the WLA minus the southwest corner section that will not be developed) is \$760,000, or \$1.56 million including indirect and induced effects.

We estimate the average annual value of commercial landings from the federal waters portion of the Revolution Wind Export Cable Corridor (defined here as two 180 m wide lanes around each of the two export cables) to be between \$61,000 and \$128,000 (between \$5,640 and \$11,900/km²/year). Of this, about 80% (between \$49,000 and \$104,000/year) is landed in Rhode Island. These landings generate estimated total annual economic impacts between \$102,000 and \$214,000 in Rhode Island.

We estimate that a total (lump sum) of \$1.65 million (2020\$) of commercial fisheries value landed in Rhode Island is potentially exposed to Revolution Wind development. This accounts for about 55% of the total potentially exposed commercial landed value from Revolution Wind. It includes about \$1,117,000 in direct landed value forgone due to construction-related effects, \$458,000 from forgone fishing during the wind farm's operation, and \$77,000 in present value of foregone landings due to effects related to decommissioning. Including indirect and induced effects, the potentially affected commercial landings result in about \$3.50 million in total (lump sum) present value economic impact in Rhode Island.

We estimate the average annual economic impact from Rhode Island-based for-hire charter fishing near the Revolution Wind development areas to be between \$278,000 and \$448,000. We estimate that a total (lump sum) of about \$450,000 in economic impact from Rhode Island-based charter fishing is potentially exposed during construction and decommissioning activities at Revolution Wind.

There is considerable variability in the baseline data of landings and landed value from the Revolution Wind lease area and export cable corridor. Baseline future landings will vary due to natural and fisheries-related fluctuations in stocks and prices. There is also uncertainty about the effects of wind farm construction and operation on fish stocks and landings, and about the ways that fishers will adapt their fishing practices in response to wind farm development. We consider our combined estimate of about \$3.95 million in economic exposure for Rhode Island commercial and charter fishing from Revolution Wind development to be a conservative upper bound on likely actual losses.

Introduction

This report estimates the level of pre-development fishing operations intersecting with, and landings and landed value from, the Revolution Wind Lease Area and the federal waters portion of the Revolution Wind Export Cable Corridor associated with landings in Rhode Island ports, and the potential effects of Revolution Wind Farm construction, operations, and decommissioning on the commercial and for-hire charter fishing industries of Rhode Island. Revolution Wind LLC is a joint venture between Ørsted and Eversource. The shaded area in Figure 1 is the export cable envelope within which the project's two export cables will ultimately be located.

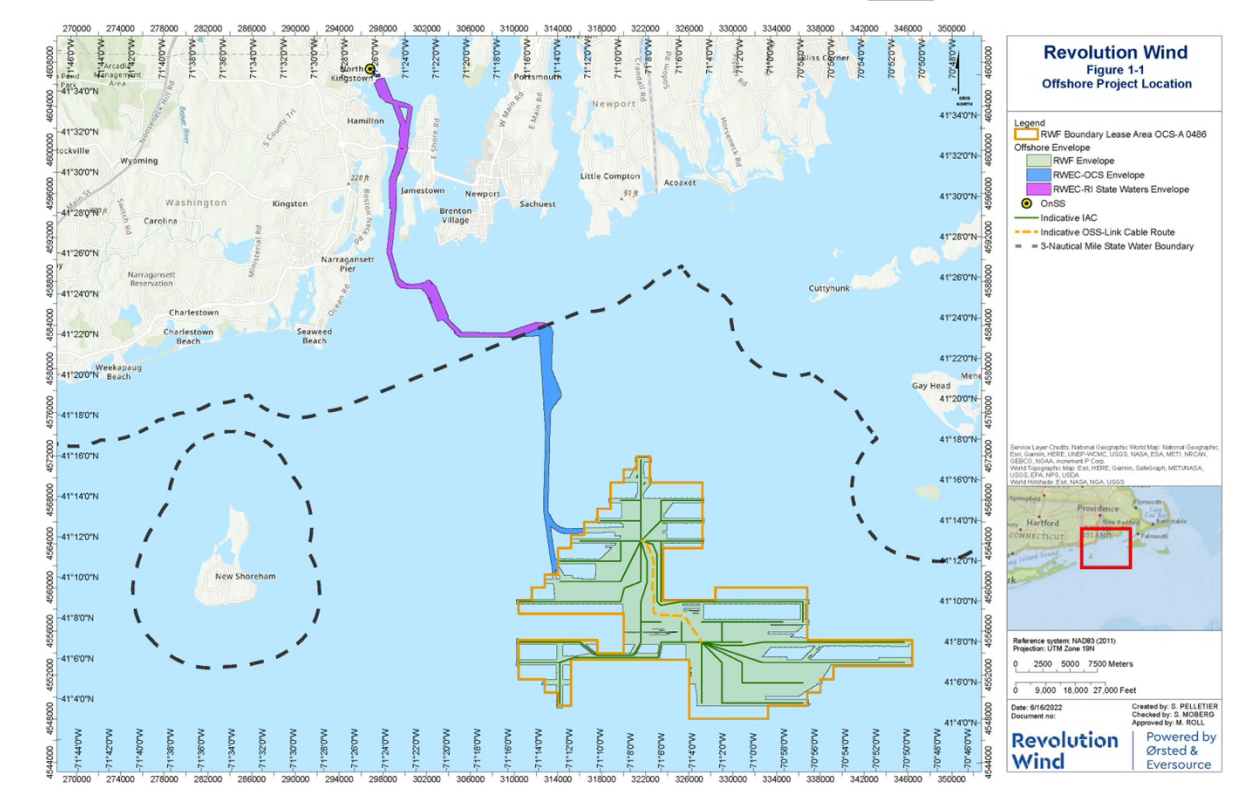


Figure 1. Revolution Wind project area and Export Cable Route envelope. Source: Revolution Wind.

The Wind Lease Area (WLA) for Revolution Wind lies in federal waters, some 30 km south of the mainland coast near the border between Rhode Island and Massachusetts. The export cable route runs north from the western edge of the WLA to the state waters boundary, and then west-north-west to the entrance of Narragansett Bay to the west of Conanicut Island. From there, the cable route runs north again to the landing location at Quonset Point in North Kingstown, Rhode Island.

To estimate commercial fish landings along the export cable route, we define a 10 km wide Export Cable Route Area (ECRA) extending 5 km on either side of the cable route. The 10 km wide ECRA has no physical significance in the context of the Revolution Wind lease, and is defined only for the purpose of identifying fisheries landings data that reflect what may be landed from fishing along the Export Cable Route (ECR).

We define the Revolution Wind Export Cable Corridor (ECC) as the combined footprint of two 180 m wide lanes centered on the two export cables. We base our calculations on the combined area of two distinct 180 m wide lanes. In practice, the lanes will overlap to some extent, as the cables will be placed less than 180 m apart at some locations along their routes.

Table 1 shows the approximate dimensions of the Revolution Wind-related areas used in this report. In the sections that follow, fishery landings and values for the Export Cable Route (ECR) are estimated and reported for the Export Cable Corridor (ECC), as defined above.

Table 1. Revolution Wind area parameters

Wind Lease Area (WLA) footprint (km ²)	334.8
Footprint of 10km Export Cable Route Area (ECRA) (km ²)	502.1
ECRA footprint in RI state waters (km ²)	264.2
RI state waters fraction of ECRA area	52.6%
ECRA footprint in federal waters (km ²)	237.9
Federal waters fraction of ECRA area	47.4%
Export Cable Corridor (ECC) length (km)	63.0
Footprint of ECC (km ²)	22.68
ECC area fraction of ECRA area	4.52%
Export Cable Corridor (ECC) length in RI state waters (km)	38.0
ECC footprint in RI state waters (km ²)	13.68
RI state waters fraction of ECC area	60.3%
ECC footprint in federal waters (km ²)	9.00
Federal waters fraction of ECC area	39.7%

Methodology

Our approach to estimating the potential effects of Revolution Wind development on commercial fishing is to first estimate the annual landed weight and value of fish from the Revolution WLA and ECC, and then to estimate the fraction of this annual value that may be exposed to wind farm construction, operation, and decommissioning. Our assessment method is consistent with the general framework described in the reports by Kirkpatrick *et al.*/BOEM (2017a and 2017b) on socio-economic impact of offshore wind energy development on commercial fisheries, and builds on the approach of Livermore (RIDEM 2017, 2018, and 2019), which develops high-end estimates of fishery impacts by including in baseline estimates the entire trip revenues from all trips that overlap with a wind lease area, regardless of how much fishing occurred inside or outside the area.

Separately, we estimate the gross revenue associated with for-hire charter boat fishing activity originating in Rhode Island, and the fraction of this revenue that may be exposed to Revolution Wind development.

We estimate the annual commercial landings and landed value of fish from the Revolution WLA and ECC using a dataset provided by NOAA's National Marine Fisheries Service. This dataset uses modeled representations of federal Vessel Trip Report (VTR) and clam logbook fishing trip data to produce a more accurate spatial allocation of landings from each fishing trip (DePiper 2014; Benjamin *et al.* 2018). As we document below, there has been considerable variability in annual landings from these areas over the past decade; we use the average landings and landed value from 2008 to 2019 as indicative of what the areas may yield in the future.

We then estimate the fraction of this average annual value that may be at risk ("exposed") due to Revolution Wind development, based on the nature and schedule of construction activities, operating plans, and decommissioning plans, and on information from the scientific literature on the effects of wind farm construction and operation on commercial fish stocks and landings.

The effect of offshore wind farm construction and operation on marine ecosystems, fish stocks and fish behavior, and fishery landings is an area of ongoing research. To date, almost all offshore wind farm development has taken place outside the US. The only wind farm off the coast of New England from which lessons might be drawn directly for Revolution Wind is the Block Island Wind Farm, a five-turbine, 30 MW project about 4 miles from Block Island, RI.

Investigations of offshore wind farms outside the US have found both positive and negative effects on marine biota, habitats, and ecological function. The effects include the aggregation of finfish and other marine life via the creation of artificial reefs (Bergström *et al.* 2014; Langhamer 2012; Lindeboom *et al.* 2011; Wilhelmsson and Malm 2008) and disturbance of existing ecosystems (Bergström *et al.* 2014; Wilhelmsson *et al.* 2006). Bartley *et al.* (2019) have reported on monitoring of physical and chemical conditions in the benthic environment around Block Island Wind Farm turbine towers over two years after the towers were installed; they found some changes in the benthos in the immediate tower foundation footprint at one out of three turbine towers they investigated, and found no changes beyond 30m from any of the towers studied.

In their 2018 study, ten Brink and Dalton interviewed commercial and recreational fishers active in the waters around the Block Island Wind Farm about the perceived effects of the farm on fish stocks and fishing activity. Respondents reported murky water, underwater noise, and vibration during construction, and a lower abundance of fish such as striped bass on the side of Block Island closest to the wind farm site during the construction time window. They also reported the presence of shellfish and finfish on and around the wind turbine towers, including an increase in the abundance of cod, within months of the conclusion of construction activities. The transient negative effect on mobile species within 5-10km of wind farm construction activities observed at Block Island is consistent with findings from Europe (Bergström *et al.* 2014; Vallejo *et al.* 2017).

Hooper *et al.* (2017) report on a survey of recreational fishers and wind farms in the United Kingdom. The authors found that most fishers in their survey either had fished near a wind farm or were interested in doing so, and concluded that most UK anglers were unlikely to change their behavior in response to wind farm development.

More recently, Dalton *et al.* (2020) reported on surveys of Rhode Island recreational boaters' preferences for boating in the vicinity of offshore wind farms. Although some survey respondents identified as fishers, the survey did not explicitly target boaters interested in fishing; the mean age of

respondents was above 62 years, mean boat length in excess of 37 feet, and more than 43% of respondents owned sailboats. Overall, boaters expressed a preference for not boating near (within 100 ft of) an offshore wind turbine; but boaters who fish were less negatively impacted by boating near a turbine, and boaters who had visited the Block Island Wind Farm were more accepting of trips near turbine towers than other boaters.

Given the current state of knowledge about the effects of wind farm construction and operation on fish stocks and fishery landings, we consider five categories of possible exposure for commercial fishing from the Revolution Wind project:

- Transient effects on fish availability due to construction activities and noise
- Transient effects due to constrained access to certain areas during construction
- Changes in fishing in the WLA during operations
- Transient effects due to constrained access to certain areas during decommissioning
- Transient effects on fish availability due to decommissioning activities

We also consider transient effects on the for-hire charter fishing industry due to construction and decommissioning of the wind farm. To the extent that for-hire charter fishing vessels from Rhode Island use the WLA and ECC, it is possible that their activities may be affected during construction and decommissioning. We consider it unlikely that the Revolution Wind development will negatively affect the personal recreational fishing activities of Rhode Island boaters.

Estimating the effect of wind farm development on fishing activity and landings is complicated by several sources of variability and uncertainty. There is considerable year-to-year fluctuation in the historical baseline commercial landings from the wind development areas; and future fishery landings from these areas are likely to differ from historical baselines due to climate change effects (Free *et al.* 2019; Oremus 2019). There is uncertainty about the extent and duration of effects of wind farm construction on fish availability in the vicinity of the wind farm, and about the habitat and other effects (if any) of the wind farm over decades of operation. There is also uncertainty about the response of the commercial fishing industry and of for-hire charter fishing vessels to the altered “landscape” resulting from wind farm development. The current state of the science about wind farm effects on commercial fishing does not support a precise estimate of effects on fish stocks; and the future decisions of fishers are by their nature not precisely predictable, especially decades into the future, because they depend on personal assessments and decisions of individual fishers.

Acknowledging these sources of variability and uncertainty, we seek to develop a realistic, conservative estimate of the potential effect of Revolution Wind development on Rhode Island commercial landings, landed value, and charter boat revenue. We make conservative assumptions about fishing industry response, assuming that landings from an area where access is constrained during construction, operations, or decommissioning are simply forgone, and not compensated by landings from fishing elsewhere instead. Further, we estimate impact as the landed value (gross revenue) at risk, not the net income or profit. Landed value is, by definition, larger than net income or profit from fishing. For these reasons, we consider our impacts estimate to represent an upper bound on the likely net effects of the wind farm on the Rhode Island fishing industry.

Throughout this report, we use “landed value” to refer to the direct value of fisheries landings, “impact” to refer to the economic activity generated by fisheries, including indirect and induced effects (see

below), and “exposure” to refer to the portion of landed value or impacts that may be at risk due to wind farm development.

Baseline commercial fishery landings and values, 2008-2019

Commercial fisheries data description

The following data description is based on information provided by the National Marine Fisheries Service (NMFS) on March 20 and April 1, 2020.¹ NOAA has been collecting and improving the Vessel Trip Report (VTR) data for decades. The data have been widely used for fisheries research, management, and economic impact assessments. The footprint of the Revolution Wind Lease Area is 334.8 km². To gauge landings value and quantity at this spatial scale, NOAA has developed a procedure to produce high-resolution spatial information using a combination of VTR and fishery observer data. As described below, we follow the general approach developed by NOAA, which is the best approach at present, with a recognition that relevant data are not perfect. All estimates of fishery landings and values in this report are based on these NMFS data; and the data have not been amended, adjusted, or augmented in any way, with two exceptions: we make adjustments to the lobster and Jonah crab landed values to account for possible underreporting; and we make adjustments to the Rhode Island lobster and Jonah crab landings to account for dockside sales. These adjustments are described in detail in the section on Adjustment of Lobster and Jonah Crab Data below. The adjusted data appear only in Tables 11 and 12 below.

The data presented below summarize estimates of fisheries landings and values for fishing trips that intersected with the Revolution Wind WLA and ECRA from 2008 to 2019 (calendar years). Modeled representations of federal VTR and clam logbook fishing trip data were queried for spatial overlap with the WLA and the ECRA, and linked to dealer data for value and landings information. As detailed in DePiper (2014) and Benjamin *et al.* (2018), to improve the spatial resolution of VTR, a spatial distribution model was developed by combining vessel trip information from VTR with matching NOAA fishery observer data, including geocoordinates of detailed fishing locations. From this model, landings and value can be summarized for a specified geographic area according to (1) species, (2) gear type, (3) port of landing, and (4) state of landing.

In essence, the DePiper approach utilizes a spatial model to distribute the total landings for each commercial fishing trip over a circular area with its center located at the geocoordinate reported in the VTR, following a distribution decreasing with the radius. The model was estimated using VTR data (for the centroid) and vessel observer data (for haul beginning and endpoints). DePiper (2014) reported that the observer data matched VTR records well (488,251 hauls in the observer data were matched to 27,358 VTR records, representing 87.5% of all hauls with either a beginning or end point of a haul recorded).

The primary purpose of the observer data collection is to monitor fishery bycatch. NOAA’s Standardized Bycatch Reporting Methodology (SBRM) dictates what types of vessels (gear, species, area of operation,

¹ Our primary contact at NMFS was Benjamin Galuardi, a statistician at the NOAA Greater Atlantic Regional Fisheries Office. He has worked extensively on fishery data analyses in general and the VTR data in particular, and has authored or coauthored more than 30 publications on fisheries sciences and spatial statistics.

etc.), participating in various fisheries, should be sampled and at what rate. The numbers of sea days needed to achieve a 30% coefficient of variation ($CV = \text{standard deviation} / \text{mean}$) of total discards for each species group were derived for different SBRM fleets covering different gears, access areas, states, and mesh sizes (NEFSC 2013). For Massachusetts vessels, the observer program covered close to 20% of trips with trawl gear, around 5% of trips with dredge gear, and around 20% of trips with gillnet gear (Jin 2015).

Following the DePiper approach, the resulting high spatial resolution data were converted into raster maps. Use of this VTR raster model produces a more accurate estimate of the spatial distribution of landings than other approaches that rely entirely on the self-reported VTR/clam logbook locations, which associate all landings from the trip with a single point location. At 10 nautical mile resolution, the confidence intervals of the DePiper model estimates are around 90% for trip lengths of one to two days.

The only alternative to the DePiper approach is a model to distribute the total landings from a VTR report over the vessel's track using the Vessel Monitoring System (VMS) data. The main challenge for this approach is accurate identification of fishing and non-fishing segments of a trip. Muench *et al.* (2018) have shown that using vessel speed alone can lead to a severe misrepresentation of fishing locations. NOAA has adopted the DePiper approach as a standard procedure to generate spatial data; and we agree with NOAA that this is the best approach currently available. The main advantages of the DePiper approach are that (1) it is based on observations of actual fishing locations noted by observers at sea, and (2) it provides a systematic and consistent way to meet the increasing demand for spatial fishing data for relatively small areas in the ocean, which is important for cross project comparison.

Landings associated with the ECC and Export Cable Route Working Area (ECR WA) are calculated by applying the factors in Table 1 to the landings estimated for the ECRA. This assumes that landings are distributed uniformly across the fished sections of the ECRA.

In order to maintain the legally required data confidentiality, summaries by species, gear type, and landing location are presented individually. In addition, for records that do not meet the "rule of three" (three or more unique dealers and three or more unique permits), values are summarized in a category labeled "ALL OTHERS." The following notes also pertain to the NOAA data:

- All landed values have been converted to 2020 dollars using the Producer Price Index for "unprocessed and prepared seafood."
- Pounds are reported in Landed Pounds, unless otherwise noted.
- Data summarized here are from federal sources only.
- Fishing vessels that carry only lobster permits for federal waters are not subject to VTR requirements. Landings from trips with no VTR are not reflected in this summary.
- Other fisheries exist in state waters that may not be reflected in data from federal sources (e.g. whelk, quahog, striped bass).

We also obtained the average monthly number of trips intersecting with each area, for the period of 2014-2019.

Commercial fishery landings from Wind Lease Area and Export Cable Corridor

Table 2 shows the average annual level and standard deviation of total values and landings associated with fishing in the Revolution WLA and the ECC from 2008 to 2019.

The average annual landings from the Revolution WLA are about 1.41 million lbs (standard deviation 575,000 lbs) with a value of about \$1.11 million (standard deviation \$303,000). Average annual landings from the ECC are about 220,000 lbs (standard deviation 142,000 lbs) with a value of \$96,000 (standard deviation \$22,000).

Table 2. Average annual value and quantity of commercial fisheries landings by area

Area	Mean		Standard Deviation	
	Value/year (2020 \$)	Landings/year (lbs)	Value/year (2020 \$)	Landings/year (lbs)
Revolution WLA	1,111,520	1,409,661	303,088	575,227
Revolution ECC	94,506	219,380	21,750	141,726

About 52.6% of the 502 km² ECRA and about 60.3% of the 22.7 km² ECC are located in Rhode Island state waters; and 47.4% and 39.7%, respectively, are in federal waters. If we assume that landings are uniformly distributed over the ECC, this suggests that landings from the federal waters portion of the ECC average \$37,519 per year. As we discuss below, the assumption of uniform distribution likely leads to an underestimate of the true value of landings from the federal portion of the ECC.

Table 3 shows the total landings and values, for each year from 2008 to 2019, associated with fishing in the Revolution WLA and ECC.

Table 4 summarizes the average annual landings and value of fisheries production from the Revolution WLA and ECC by the top five species or species groups. Lobster, scallops, monkfish, and skate wings are among the species/products generating the greatest value from the Revolution WLA during the 2008-2019 time period.

Table 3. Annual value and quantity of commercial fisheries landings by area.

Area Year	Revolution WLA		Revolution ECC	
	Value (2020 \$)	Landings (lbs)	Value (2020 \$)	Landings (lbs)
2008	1,536,395	1,036,114	98,544	117,618
2009	1,530,787	2,164,702	105,082	240,398
2010	871,719	898,253	86,720	150,650
2011	1,130,275	1,072,961	106,078	196,432
2012	985,312	1,550,209	138,310	512,126
2013	1,074,375	2,172,428	110,010	393,782
2014	1,305,547	1,823,589	106,112	373,100
2015	1,315,460	1,512,205	95,854	222,086
2016	1,352,878	2,207,727	91,596	209,436
2017	708,637	741,564	62,640	75,972
2018	627,644	642,333	66,692	62,180
2019	899,210	1,093,844	66,436	78,780

Table 4. Average annual landings of major species by area, 2008-2019.

Area/Species	Mean		Standard Deviation	
	Value/year (2020 \$)	Landings/year (lbs)	Value/year (2020 \$)	Landings/year (lbs)
Revolution WLA				
Lobster, American	216,526	39,033	90,284	15,007
Scallops	161,804	14,982	155,706	16,242
ALL_OTHERS	130,334	197,741	112,472	195,923
Monkfish	110,376	65,752	52,747	23,647
Skate Wings	93,077	351,557	45,462	161,671
Revolution ECC				
Herring, Atlantic	17,562	132,076	16,902	137,256
Lobster, American	17,352	3,196	9,126	1,500
Squid/Loligo	9,804	7,186	5,120	3,946
Flounder, Summer/Fluke	9,538	2,408	1,842	658
Scup/Porgy	7,804	11,906	2,748	5,206

Both mobile (e.g., trawl and dredge) and fixed (e.g., pots and gillnet) gears are used in fishing operations. The trawl gear is primarily used for harvesting groundfish, dredges for harvesting scallops, and pots for lobster and crabs. The fixed gears are fished using trawls (a series of lobster pots attached to one line) with string lengths of 0.4–0.8 km (up to 1.829 km) or gillnets with typical string lengths of 0.2–3.0 km. Tables 5a and 5b break out annual landings for each area by gear type. Trawl and pot fisheries and gillnets are the most significant in both areas, followed by gillnets and dredges. The “ALL_OTHERS” category includes landings using purse seines, other seines, and weirs/traps, and others that fall under the “rule of three” exclusion.

Table 5a. Average annual landings in Revolution WLA by gear type.

Gear	Mean		Standard Deviation	
	Value/year (2020 \$)	Landings/year (lbs)	Value/year (2020 \$)	Landings/year (lbs)
Dredge – Clam	-	-	-	-
Dredge – Scallop	154,207	14,568	149,030	15,835
Gillnet – Sink	176,002	204,502	72,178	70,998
Gillnet – Other	-	-	-	-
Handline	2,224	599	3,096	714
Longline – Bottom	-	-	-	-
Pot – Other	266,092	73,946	83,498	16,523
Trawl – Bottom	330,166	596,198	87,013	191,165
Trawl – Midwater	39,307	315,244	51,543	402,464
Other	320	28	1,107	97
ALL_OTHERS	143,202	204,576	110,496	193,776

Table 5b. Average annual landings in Revolution ECC by gear type.

Gear	Mean		Standard Deviation	
	Value/year (2020 \$)	Landings/year (lbs)	Value/year (2020 \$)	Landings/year (lbs)
Dredge – Clam	-	-	-	-
Dredge – Scallop	2,654	242	1,852	152
Gillnet – Sink	7,726	10,316	2,402	4,790
Gillnet – Other	-	-	-	-
Handline	314	94	116	28
Longline – Bottom	-	-	-	-
Pot – Other	22,008	6,782	7,674	1,842
Trawl – Bottom	45,296	97,640	10,172	34,130
Trawl – Midwater	12,222	98,992	12,556	111,684
Other	-	-	-	-
ALL_OTHERS	4,286	5,316	2,810	4,114

Table 6 summarizes annual landings and landed value for the major ports receiving landings from both areas. Point Judith and Little Compton (both in Rhode Island) and New Bedford in Massachusetts are among the most significant ports for landings from the Revolution Wind areas. Tables A5 through A7 in the Appendix show the complete data on average annual landings and landed value by port for Rhode Island and Massachusetts.

Tables 7a and 7b show average annual landings and landed value from the two areas by state where the catch is landed. Rhode Island and Massachusetts together account for more than 95% of landings and landed value from the WLA and more than 96% of landings from the ECC. The “others” category includes landings in Maine, Connecticut, New York, New Jersey, Maryland, North Carolina, and Virginia, as well as data flagged by the “rule of three” exclusion.

Table 6. Average annual landings at major ports in Rhode Island and Massachusetts.

Area/Port	Mean		Standard Deviation	
	Value/year (2020 \$)	Landings/year (lbs)	Value/year (2020 \$)	Landings/year (lbs)
Revolution WLA				
Point Judith, RI	395,422	372,813	94,641	117,967
New Bedford, MA	345,249	531,251	148,331	361,113
Little Compton, RI	118,582	117,951	40,381	46,312
Westport, MA	65,122	25,925	32,456	12,768
Newport, RI	61,342	177,188	35,395	141,446
Revolution ECC				
Point Judith, RI	49,630	84,938	8,184	41,964
Newport, RI	12,996	29,990	6,354	19,748
New Bedford, MA	11,154	70,578	7,936	83,742
Little Compton, RI	8,468	9,534	4,620	6,828
ALL_OTHERS	2,846	8,258	3,696	14,334

Table 7a. Average annual landings from Revolution WLA by state.

State	Mean		Standard Deviation	
	Value/year (2020 \$)	Landings/year (lbs)	Value/year (2020 \$)	Landings/year (lbs)
Rhode Island	592,816	705,478	139,434	203,746
Massachusetts	475,849	668,182	181,263	418,179
Others	42,855	35,463	--	--

Table 7b. Average annual landings from Revolution ECC by state.

State	Mean		Standard Deviation	
	Value/year (2020 \$)	Landings/year (lbs)	Value/year (2020 \$)	Landings/year (lbs)
Rhode Island	75,858	131,252	15,808	52,728
Massachusetts	15,508	82,018	9,096	88,402
Others	3,140	5,666	--	--

Landed value and trips by month

Table 8 and Figures 2 and 3 show the average monthly landings and values from the two areas. Table 9 reports the average monthly number of fishing trips that intersect each area.

Table 8. Average monthly value of landings, 2020\$, 2014-2019.

Month	Revolution WLA	Revolution ECC
Jan	54,438	3,126
Feb	47,949	1,462
Mar	67,934	1,932
Apr	43,472	1,858
May	78,689	7,818
Jun	130,371	11,112
Jul	141,304	10,564
Aug	136,187	10,550
Sep	113,114	8,278
Oct	85,819	6,942
Nov	72,166	5,944
Dec	75,563	13,070

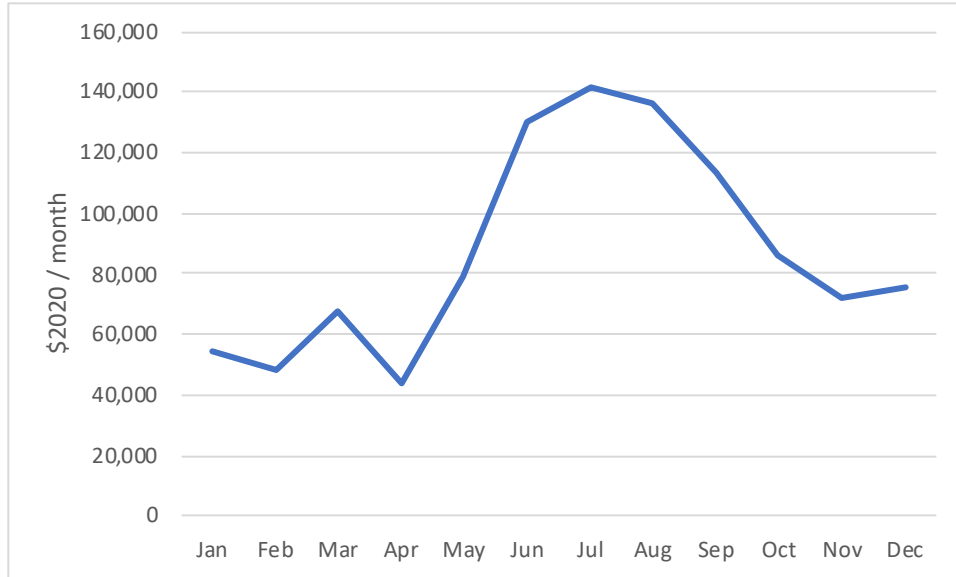


Figure 2. Average monthly value of landings, Revolution WLA, 2014-2019.

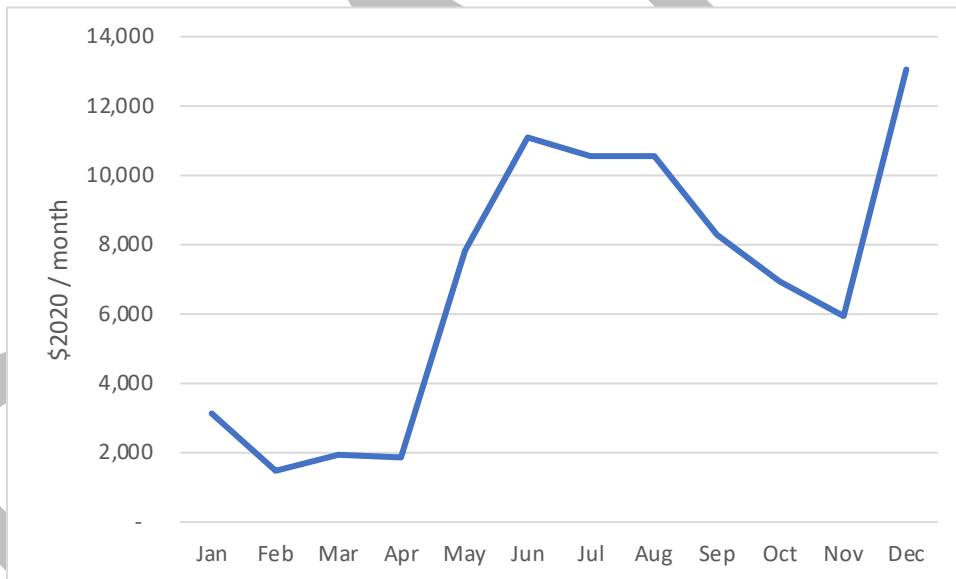


Figure 3. Average monthly value of landings, Revolution ECC, 2014-2019.

Table 9. Average monthly number of fishing trips, 2014-2019.

Month	Revolution WLA	Revolution ECRA
Jan	258	260
Feb	132	120
Mar	119	104
Apr	210	201
May	549	876
Jun	762	1,032
Jul	972	1,180
Aug	904	1,053
Sep	737	872
Oct	498	660
Nov	399	511
Dec	341	398

Inter-annual price adjustments

We use the Bureau of Labor Statistics' Producer Price Index (PPI) for "unprocessed and prepared seafood"² to convert ex-vessel value of fish landings, because this index is specifically for the fishery sector. PPI is a family of indexes that measures the average change over time in selling prices received by domestic producers of goods and services; they measure price change from the perspective of the seller. In contrast, the Bureau of Economic Analysis' general Gross Domestic Product (GDP) deflator³ measures changes in the prices of goods and services produced in the United States, including those exported to other countries, and captures price changes across all economic sectors. Table 10 shows both indexes from 2000 to 2021.

Note that the variation in the sector (i.e., fishery) specific price index is considerably larger than that of the GDP deflator. PPI decreases have been observed in several years since 2000. The GDP deflator exhibits a steady trend. We recognize that many seafood prices rose sharply in 2021, as reflected by the sharp increase in fish PPI for that year. We consider it unlikely that this will significantly alter the long-term trend, and maintain that the historical average is the best predictor of future values.

We report all values in 2020\$ for consistency. These values can be easily adjusted to any other-year dollars by applying the appropriate index adjustment. Landed value may be adjusted using the PPI index. For impact values, including upstream and downstream effects (see below), it is more appropriate to use the GDP deflator to adjust, because the multipliers capture economy-wide impacts.

² <https://www.bls.gov/ppi/#data>

³ <https://apps.bea.gov/iTable/iTable.cfm?reqid=19&step=2#reqid=19&step=2&isuri=1&1921=survey>

Table 10. Price indexes.

Year	GDP implicit price deflator	Percent change	PPI fish	Percent change
2000	78.0		198.1	
2001	79.8	2.25%	190.8	-3.69%
2002	81.0	1.56%	191.2	0.21%
2003	82.6	1.97%	195.3	2.14%
2004	84.8	2.68%	206.3	5.63%
2005	87.5	3.14%	222.6	7.90%
2006	90.2	3.09%	237.4	6.65%
2007	92.6	2.70%	242.8	2.27%
2008	94.4	1.92%	255.4	5.19%
2009	95.0	0.64%	250.9	-1.76%
2010	96.2	1.20%	272.4	8.57%
2011	98.2	2.08%	287.6	5.58%
2012	100.0	1.87%	287.6	-0.02%
2013	101.8	1.75%	299.4	4.12%
2014	103.7	1.87%	322.4	7.68%
2015	104.7	1.00%	322.0	-0.13%
2016	105.7	1.00%	327.6	1.74%
2017	107.7	1.90%	337.9	3.15%
2018	110.3	2.39%	344.5	1.96%
2019	112.3	1.79%	349.9	1.55%
2020	113.6	1.21%	350.8	0.27%
2021	118.4	4.15%	413.0	17.74%
Annual average		2.01%		3.66%

Adjustment of lobster and Jonah crab data

As noted above, lobster vessels that carry only lobster permits are not subject to a VTR requirement. Trips without VTR are not reflected in the numbers shown in Tables 2 through 9 (cf. King 2019). To account for potentially unreported lobster and Jonah crab landings, and for dockside sales (see below), we make adjustments to the landed value data as shown in Table 11. Data in the first three rows are based on VTR data, and are taken from Table 2 and Tables A1 through A3 in the Appendix. An earlier study by Industrial Economics (2015) indicates that active lobster vessels not subject to trip report requirements in Lobster Management Area 2 may account for as much as 57% of the total lobster fishing activity in that area. (Lobster Management Area 2⁴ encompasses the waters south of Rhode Island and Cape Cod to a distance of about 40 nm, and includes the Revolution Wind project areas.) We assume conservatively that landings from 60% of the lobster vessels in the Revolution WLA and ECRA could therefore be unreported, and that the VTR data represent 40% of the true lobster and Jonah crab revenues. We use this as an adjustment factor, and estimate the adjusted lobster and Jonah crab revenues at 2.5 times of those in the VTR data.

Some fraction of lobster and Jonah crab landings are sold directly from boats at dockside, at a price above that reported in the dealer information on which the NOAA values above are based. Neither the

⁴ <http://fisheries.noaa.gov/resource/map/lobster-management-areas>

fraction of landings sold in this way nor the price premium is known exactly. Based on information provided by a group of Rhode Island fishermen (pers. comm., 24 Nov. 2020), we estimate that a 15% premium on the landed value derived from NOAA data (Table 11) adequately captures this dockside sales effect for Rhode Island landings. Dockside sales are not a common practice in Massachusetts (Mass. DMF pers. comm. May 2021), so we do not apply this multiplier to Massachusetts landings.

The combined adjustment for VTR data and dockside sales is shown in rows 5 and 6 in Table 11. The net increase is shown in row 7, and the adjusted total annual landed values are shown in row 8. This adjustment results in a 36% increase in the estimated total annual landed value.

Table 11. Adjustment of landed value for landings not captured in VTR data and for RI dockside sales.

Value (2020\$)	Revolution WLA	Revolution ECC
Avg. VTR total \$/year (Table 2)	1,111,520	94,506
Avg. VTR lobster \$/year (Tables A1-A3)	216,526	17,351
Avg. VTR Jonah crab \$/year (Tables A1-A3)	18,145	1,255
% of total captured by VTR	40%	40%
Adjusted lobster \$/year	584,621	48,610
Adjusted Jonah crab \$/year	48,992	3,514
Net increase over VTR \$/year (row 5+6-2-3)	398,941	33,509
Adjusted total landed value \$/year	1,510,461	128,015
Adjusted increase over VTR total value	35.9%	35.5%

Adjustment for infeasible turbine tower locations

As of January 2023, Revolution Wind has deemed more than 20 of the 100 possible turbine tower locations in the WLA to be infeasible for tower installation given current technology constraints. This includes the nine turbine tower locations in the triangular section on the southwestern corner of the WLA. We define the Wind Turbine Generator Area (WTGA) as the subset of WLA that encloses the turbine tower locations that will be developed; the WTGA thus excludes the “appendage” in the southwestern corner of the WLA (Figure 4).

The footprint of the WTGA as defined above is approximately 91.8% of the footprint of the WLA. Assuming that landed value per unit area is uniform across the WLA, this results in an estimated average annual landed value from the WTGA of \$1,387,056 (2020\$), of which \$759,883 is landed in Rhode Island.

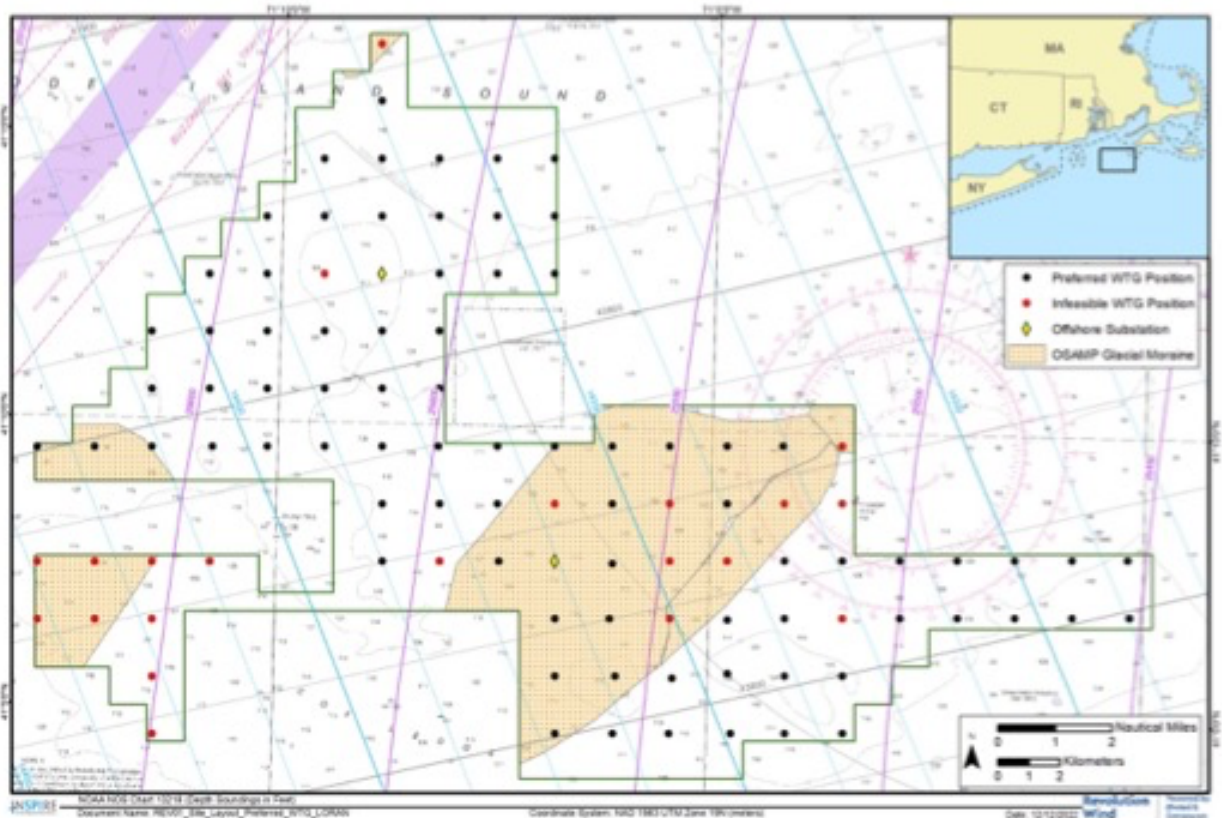


Figure 4. Preferred and infeasible wind turbine generator positions. Source: Revolution Wind.

Estimated indirect and induced economic impacts

Economic impact multipliers reflect the linkages between economic activity in different sectors of the economy. For example, when landings increase in the commercial fishing sector, there is an associated increase in the purchases of ice and other supplies in the region, and an increase in onshore transportation and processing of seafood. The resulting increases in economic activity in the commercial fishing supply and transportation and processing sectors are indirect effects of increased landings. In addition, because fishermen and workers in the supply, transportation, and processing industries earn greater income as a result of this increased activity, and spend some of that extra income on local goods and services, there is also an induced effect of greater spending in other sectors. The multipliers capture the combined effect of indirect and induced spending that results from higher commercial landings.

We have developed regional economic models for Rhode Island using the IMPLAN model software (IMPLAN 2004) and data for 2018 and 2019. IMPLAN software and data are commercial products widely used by researchers and management agencies to perform economic impact analyses for a specified study region (IMPLAN 2004; Steinback and Thunberg 2006; Hoagland *et al.* 2015; UMass Dartmouth. 2018; Cape Cod Commission 2020). Based on these models, and 2019 data, the upstream output multiplier for the commercial fishing industry in Rhode Island is 1.84.

We have also taken into account downstream economic activity, such as seafood processing, that may take place at Rhode Island businesses as a result of commercial fisheries landings. This linkage is less direct than the upstream activities, because not all seafood landed in a state is processed in the state, and seafood processors may import more seafood from elsewhere for processing when in-state landings fall short. Nonetheless, we add a downstream adjustment of 0.379, based on discussion with Rhode Island seafood industry representatives, to the multiplier for Rhode Island landings, bringing the combined multiplier to 2.219, to account for both upstream effects and downstream effects to seafood processors. We apply the combined upstream and downstream multiplier to all landings except lobster and Jonah crab, which are adjusted for dockside sales and receive only the upstream multiplier. The corresponding combined multiplier for Massachusetts landings is 2.205; for landings in other states, we use the average of the Massachusetts and Rhode Island multipliers.

While we use a single output multiplier for the entire commercial fishing sector in a given state, we recognize that the multiplier may vary across specific fisheries, species, and gear. We also recognize that other types of multipliers, such as those focusing on employment effects, have been used in other analyses. We maintain that the output multipliers we use provide a robust and accurate measure of indirect and induced effects averaged across the fishing sectors.

Using these multipliers, and including the lobster and Jonah crab adjustment described in the previous section, we estimate the average annual total economic impact from commercial fishing activity in the Revolution WLA to be about \$1.70 million, and from the WTGA about \$1.56 million, in Rhode Island (Table 12). We also estimate the average annual total economic impact from commercial fishing activity in the ECC to be about \$214,000 in Rhode Island. Including landings in other states, the total average annual economic impact from commercial fishing activity in the WLA is \$3.21 million and in the ECC it is \$267,000. These estimates are based on average annual landings value from 2008 to 2019, with lobster and Jonah crab landed value adjusted to account for boats not subject to VTR requirements.

Table 12. Estimated annual economic impact in Rhode Island (all values in 2020\$)

Area	State	Average value of landings/year			Total impact/year “dockside sales” column multiplied by upstream & downstream multipliers, except RI lobster & JC
		VTR data only (Table 11, row 1)	with lobster & Jonah crab adjustment	with dockside sales adjustment (15% premium on RI lobster & JC landings)	
Revolution WLA	total	1,111,520	1,463,527	1,510,461	3,206,170
Rev. WTGA	total	1,020,709	1,343,957	1,387,056	2,944,226
Revolution ECC	total	94,506	122,415	128,015	267,483
Revolution WLA	RI	592,816	780,554	827,489	1,699,822
Rev. WTGA	RI	544,383	716,783	759,883	1,560,947
Revolution ECC	RI	75,858	98,260	103,860	214,193

Table 13 shows the breakdown of landed value from the Revolution Wind ECC by the Rhode Island state waters and federal waters portions of the ECC. This assumes that landed value is uniformly distributed across the ECRA.

Table 13. Estimated annual economic impact from state and federal sections of the ECC (2020\$)

Landings port location(s)	ECC portion	Average value of landings/year			Total impact/year
		VTR data only	with lobster & Jonah crab adjustment	with dockside sales adjustment	with all adjustments
All ECC landings	Total	94,506	122,415	128,015	267,483
	RI state	56,987	73,816	77,193	161,292
	Federal	37,519	48,599	50,822	106,191
Landings in RI	Total	75,858	98,260	103,860	214,193
	RI state	45,742	59,251	62,628	129,158
	Federal	30,116	39,009	41,232	85,034

The estimate of landings (\$41,232/year) and impact (\$85,034/year) in Rhode Island from fishing in the federal waters portion of the ECC (bottom row of Table 13) is likely to underestimate the true values because the NOAA data on which they are based do not include landings associated with Rhode Island state fishing permits, and therefore may reflect mainly landings from federal waters rather than the entire ECC. An alternative, likely upper bound estimate of landings and impact in Rhode Island from fishing in the federal waters portion of the Revolution ECC can be obtained by assuming that the NOAA data do not include any landings from Rhode Island state waters. This results in an upper bound estimate of \$103,860/year in landed value and \$214,193/year in total impacts, as shown in row 4 (“Landings in RI Total”) of Table 13.

Exposure of commercial fishery resources and fishing to wind farm development

In the following sections, we consider five categories of possible exposure of commercial fishery landings and landed value from the Revolution Wind project:

- Transient effects on fish availability due to construction activities and noise
- Transient effects due to constrained access to certain areas during construction
- Changes in fishing in the WLA during operations
- Transient effects due to constrained access to certain areas during decommissioning
- Transient effects on fish availability due to decommissioning activities

The assumptions and effects on fish availability and fishing activity/landings are summarized in Table 14 for each category and project area. For the purpose of estimating exposure effects, we use baseline values estimated for the Wind Turbine Generator Area (WTGA), the subset of the WLA in which turbine

generator towers are to be located. The WTGA lies within the WLA and is smaller in total footprint, since not all of the WLA is utilized for turbine generator towers. In the sections that follow Table 14, we describe how we arrived at the assumptions, with references in the text corresponding to the row codes (a), (b), (c), etc. in the table. The assumptions are based in part on information from the Revolution Wind Construction and Operations Plan (COP; Revolution Wind LLC 2021) and from acoustic modeling work for wind farm turbine foundation installation (Denes *et al.* (JASCO) 2018).

Table 14. Assumptions for exposure of commercial fisheries to wind farm development.

Categories of Potential Exposure		Assumptions/Effects	Duration	
Availability effects due to construction	WTGA+5km	100% of finfish leave area (a)	1 year	
	WTGA	Lobster/crab landings reduced 10% (b) Other shellfish landings reduced 10% (c)	1 year 4 years	
	ECRA	1.6km WA	All landings reduced 10% (d)	1 year
		180m ECCs	Lobster/crab landings reduced 25% (e) Other shellfish landings reduced 25% (f)	1 years 4 years
Construction constrained access	WTGA	No fishing in 50% of area (g)	1 year	
	ECRA	1.6km WA	No fishing in 5% of area (h)	6 months
		180m ECCs	No fishing in 100% of area (i)	2 months
Effects during operations	WTGA	Landings reduced by 5% (j)	30 years	
	ECRA	1.6km WA	None	
		180m ECCs	None	
Availability effects due to decommissioning	WTGA	None beyond constrained access		
	ECRA	1.6km WA	All landings reduced 5% (k)	1 year
		180m ECCs	Lobster/crab landings reduced 12.5% (l) Other shellfish landings reduced 12.5% (m)	1 year 4 years
Decommissioning constrained access	WTGA	No fishing in 50% of area (n)	1 year	
	ECRA	1.6km WA	No fishing in 5% of area (o)	2 months
		180m ECCs	No fishing in 100% of area (p)	2 months

(a), (b), (c) etc. refer to detailed explanations in the text that follows

The estimates we present in the following sections include all commercial fishing in the Revolution Wind project areas; we then estimate the portion of this total associated with the Rhode Island fishing sector, based on the sector's share of the Revolution Wind area landed value. The baseline values for each project area and species group are shown in Table 15.

Table 15. Baseline landed values (2020\$) used for exposure calculations.

	WTGA	WTGA+5km	1.6km ECC WA	2x180m ECC
Total landed value:	1,387,056		568,956	128,015
Lobster & Jonah crab	581,846		231,621	52,115
Other crabs	2,249		1,575	354
Scallops	148,585		12,670	2,851
Other shellfish	7,871		8,139	1,831
Finfish/mobile species	646,506	1,900,561	314,950	70,864
RI landed value:	759,883		461,600	103,860
Lobster & Jonah crab	330,434		190,829	42,937
Other crabs	1,199		840	189
Scallops	79,246		6,758	1,520
Other shellfish	4,198		4,341	977
Finfish/mobile species	344,806	1,013,642	167,975	37,794

Transient availability effects due to construction

The construction schedule (Revolution Wind LLC 2021) envisions construction activity in the WLA taking place mainly during the second, third, and fourth quarters of 2024, with some work on the inter-array cables and offshore sub-stations/link cable taking place in the first quarters of 2024 and 2025. Work along the ECC is scheduled to take place during the third and fourth quarters of 2024. To convert future effects to a common basis, we apply a real discount rate of 5% – the average of the rate usually applied in natural resource valuation (3%) and the rate usually applied by the US government for public investment and regulatory analyses (7%).

Construction noise during drilling and pile driving, and disturbance of bottom sediments and rocks, is likely to have an impact on fish and shellfish in and around the Revolution Wind project areas. Mobile species may leave the area because of construction noise, and species that rely on seafloor habitat may be injured or displaced.

Our estimate of the effect of construction in and around the WLA is based on a pile driving scenario involving 11 m monopiles, each installed within 24 hours, using a 4,000 kJ hammer, and 10 dB of noise attenuation. We assume conservatively that pile driving may extend over as much as nine months. We consider separately the likely effect of pile driving and turbine tower installation on shellfish (lobster, scallops, Jonah crab) and on finfish.

We assume conservatively that all finfish will leave all areas in and around the WTGA where pile driving noise exceeds 160 dB. There is no scientific evidence that the 150 dB threshold sometimes cited for “temporary behavioral changes” (Cal Trans 2015) leads to substantive relocation of finfish; and even 160 dB is far below any documented injury threshold. The maximum range for pile driving noise in the Revolution Wind setting is likely to be about 4,800 m for 160 dB (Denes *et al.* (JASCO) 2018, p. G-52, row 4 of Table G-7). We therefore assume conservatively that all finfish leave the WTGA and a 5 km buffer zone around the WTGA for the duration of pile driving (up to nine months) and return after a further three months (total of one year; Table 14 (a)). This is consistent with reported anecdotal observations

by fishers around the Block Island Wind Farm (ten Brink and Dalton 2018), which suggest that the construction noise effect may extend 5-10km from its source, and that many finfish will return to the area within months of the end of construction. To estimate the value associated with this effect for Revolution Wind, we obtained data from NOAA on average annual landings from a region enclosed by a 5 km buffer around the Revolution WTGA. Based on these NOAA data, the annual value of finfish landings for this buffer area is about \$1.90 million (2020\$). The discounted value (at 5%) from the 2024 construction year is about \$1.56 million (2020\$), of which \$843,000 is attributable to Rhode Island.

The closest approximation in the literature for a construction noise injury/mortality threshold for shellfish is the “mortality and potential mortal injury” 24-hour exposure threshold of 219 dB for “fish without swim bladders” (Popper *et al.* 2014; Denes *et al.* (JASCO) 2018). This level of exposure will extend no more than 160 m from tower locations (Denes *et al.* (JASCO) 2018, p. G-54, top row of Table G-9), a radius that covers about 2% of the WTGA footprint, assuming 81 towers. The 200 to 250 km of inter-array cables, with a maximum disturbance corridor width of 40m, represent another 3% of the WTGA footprint that may be affected by cable burial activities. To be conservative, we increase the estimate of the combined effect by a factor of two, to 10% of the WTGA footprint, and assume that 10% of the lobster, crab, scallop, and other shellfish populations within the WTGA are adversely affected by pile driving noise and/or cable burial work during construction, and thus lost to fishing (Table 14 (b and c)). This assumption also accounts for any shellfish that may be buried and lost due to construction activities around the foundations of the turbine towers. We assume that lobster and crab will repopulate the portions of the WTGA from which they are displaced within a year after pile driving ends, and that scallop and other non-mobile shellfish stocks in those portions of the WTGA will rebuild over the course of four years after pile driving ends (Table 14(c)).

Along the ECC, the greatest effects are likely to be due to habitat disruption along the immediate cable route; cable laying does not involve the same disturbance from drilling or pile driving as turbine tower installation. We therefore consider significant displacement of mobile species from the ECC and Working Area to be unlikely. The habitat disruptions that impact non-mobile benthic species are likely to extend on average no more than 5-10m on either side of the immediate cable routes – at most 12% of the ECC and 2% of the ECC WA area. To be conservative, we model a 25% reduction in landings of all shellfish for one year and in non-mobile shellfish over four years from the ECC (Table 14 (e and f)), and a 10% reduction in landings for all species for one year from the 1.6km ECC Working Area (Table 14 (d)).

Transient effects from constrained access during construction

During wind farm construction activities, fishing may be temporarily constrained in parts of the WLA and along the export cable routes. For example, Revolution Wind anticipates a 500-yard-radius construction safety zone around tower locations during construction activities, and around any vessel installing cables. In practice, during these construction and cable-laying activities, some fishing that would have taken place in those areas is likely to shift to other nearby locations, replacing some of the forgone landings. If fishers prefer to fish within the construction areas, that is likely because these are thought to be more productive than alternatives. As an upper bound on effects from these temporary constraints, we estimate the full average value of landings linked to the affected areas.

We assume conservatively that fishing is constrained in half of the Revolution WLA for 12 months (Table 14, (g)), and in 5% of the 1.6km ECC Working Area for six months (Table 14 (h)), during construction activities. In addition, we assume that fishing is constrained within all of the ECC area immediately

around the export cable routes for a period of two months (Table 14 (i)) as the cable is laid and then buried by a separate vessel.

We use as a basis for our calculations the average annual values for each area (Table 15), prorated according to the availability effects described above and the fraction of the year affected, and discounted to 2020\$ at 5%. Note that the assumption about all finfish leaving the WTGA for a year means that there is no further effect from constrained access to finfish in the WTGA. To be conservative, we do not adjust for double-counting of effects in the overlap between the 5km buffer around the WTGA and the ECC.

Table 16 shows the combined results of the availability and constrained access effects (Table 14 (a)-(i)). The total value of landings associated with construction effects is estimated to be about \$2.04 million (2020\$), of which about \$1.12 million is associated with landings in Rhode Island.

Table 16. Estimated value of landings associated with construction effects.

Area	Estimated Landed Value Exposure (2020\$)	
	Total	Rhode Island
Revolution WTGA + 5km	1,964,201	1,057,511
Export Cable Corridor / WA	74,410	59,513

Effects due to fishing constraints during operations

If fishing activity is constrained at certain locations within the wind farm area during the operating life of the project, it may be appropriate to treat these areas as lost to fishing during that time. For example, areas in the immediate vicinity of turbine towers may not be accessible to bottom trawl fishing once the wind farm is built. Fishers are likely to adapt to such constraints by shifting fishing effort slightly from previous locations or tracks. This sort of adaptation by the fishing industry is made easier by the regular one-by-one nautical mile east-west/north-south grid spacing for wind turbine towers that has been adopted for Revolution Wind and other wind development projects (Deepwater Wind South Fork 2020). Because it is not possible to know exactly how the fishing industry will respond to this change in future years, or what the implications of that adaptation will be for catch and landings, we assume here that the landings from affected areas are simply not realized. This is a conservative assumption that likely overstates the actual loss of landings due to wind farm development.

Fishing activity constraints during wind farm operations apply only to the WTGA; we do not expect any constraints along the ECC during operations. The footprint of the Revolution Wind project area is 33,480 hectares, of which permanent structures occupy less than 10 hectares, or 0.03% of the total area. A 100m radius area around each of the turbine towers accounts for about 0.8% of the total WTGA, suggesting that less than 1% of the WTGA area may be lost to fishing. Mobile gear (dredge, trawl) fishing accounts for about one third of landed value from the Revolution WTGA, while about half of landed value is due to lobster and Jonah crab, which will move from inaccessible areas to find bait in traps; lobster fishers are skilled at setting traps in the vicinity of rock outcroppings that present similar

challenges to navigation as turbine towers. We thus assume conservatively that as much as 5% of total baseline landings from all stocks within the WTGA may be lost to fishing during operations Table 14 (j)).

Since the Revolution Wind project will be operating for 30 years, we estimate the potential loss associated with these forgone landings by calculating the present value of 5% of baseline landings for a 30-year period beginning in 2025.

The resulting estimate of the total value of potential lost landings during project operations is \$835,335, of which \$457,629 is associated with landings in Rhode Island.

Transient effects from constrained access and availability effects during decommissioning

After approximately 30 years of operations, Revolution Wind plans to decommission the project. This involves removing the turbine towers and foundations, and the cables including the export cable.

We estimate that the duration of decommissioning, and resulting access constraints in the WTGA during decommissioning, will be similar to those experienced during construction of the wind farm (Table 14 (k)). Because relatively little noise is associated with decommissioning compared to construction, we do not model decommissioning effects in the WTGA beyond the effects that overlap with access constraints (Table 14 (n)).

We expect that access constraints along the ECR will be similar to those during cable laying operations, but likely for a shorter duration. We therefore model access constraints on 5% of the ECC WA and 100% of the ECC itself for a total of two months (Table 14 (o) and (p)). Because cable removal is less disruptive than burial, we model half of the availability effect for decommissioning as we do for cable installation (Table 14 (l) and (m)).

We then discount the value of affected landings from decommissioning to 2020\$ by applying a 5% discount rate. The resulting present value (2020\$) estimate of potential lost landings due to access constraint and availability effects during decommissioning is \$135,812, of which \$76,962 is associated with landings in Rhode Island.

In summary, the total landed value from fishing in federal waters potentially exposed to Revolution Wind project development is estimated to be about \$3.01 million (2020\$), of which \$2.93 million is associated with the WLA/WTGA (plus 5km perimeter) and \$84,000 is associated with the federal waters portion of the ECC. Rhode Island landings account for 55% of total landings from the WLA and 81% of total landings from the federal portion of the ECC. The landed value of Rhode Island commercial landings potentially exposed by Revolution Wind development is therefore about \$1.65 million. This includes about \$1,117,000 in forgone landings due to construction, \$458,000 during operations, and \$77,000 during decommissioning.

Applying the upstream and downstream multipliers as described above results in an estimate of \$1.85 million in indirect and induced effects in Rhode Island, for a total impact of \$3.50 million.

Rhode Island-based charter fishing

To obtain data on for-hire charter fishing activity in the Revolution Wind Lease Area and Export Cable Corridor, we conducted an online survey of Rhode Island- and Massachusetts-based charter vessel operators. The survey asked operators to identify their fishing locations on a chart, and report for each location:

- the total number of annual for-hire fishing trips that vessel took in each of the years 2017-2021,
- the average number of passengers onboard for-hire trips in each of the years 2017-2021, and
- the average amount of time spent targeting highly migratory species (HMS) relative to bottom fishing or trolling for other species during for-hire trips.

The survey was first distributed on April 18, 2022 through email lists maintained by Rhode Island Department of Environmental Management (RIDEM), Rhode Island Coastal Resources Management Council (RICRMC) and Massachusetts Division of Marine Fisheries (MADMF), and also via email by for-hire fishing industry representatives, including the Rhode Island Party and Charter Boat Association. The survey was active from April 18, 2022 until May 14, 2022.

The survey received 91 total responses from for-hire charter owners and/or operators. Sixty-six of these respondents (72%) reported that they fish in the area from Block Island to Nantucket, depicted in Figure 5. These 66 respondents reported 62 unique vessels, and reported effort data for 29 of those vessels across the five-year period of 2017-2021 (Table 17). Similar studies published in the peer-reviewed academic literature using paper mail, email, or mixed mode survey distributions typically have survey response rates around 20-30% (e.g., Dalton *et al.* 2020, Carr-Harris and Steinback 2020). Based on discussions with for-hire industry representatives, approximately 100 vessels actively engage in for-hire fishing activity in the waters depicted in Figure 5, suggesting the fishing reported by survey respondents accounts for about 29% of the total. Thus, the response rate for the primary population of interest is within an appropriate range to consider our survey distribution a success. An important note to also consider is that there are vessels in our sample that require the submission of federal VTRs. A common

Table 17. For-hire charter fishing survey summary statistics.

Description	Number
Fished in the area and responded to the survey	66
Provided vessel names	62
of which based in Rhode Island	24.5
Provided annual vessel trip numbers	31
Observations with vessel trips reported (2017-2021)	142
Total trips per year	1 – 235
Average total trips per year	47.30
Passengers per vessel trip	2 – 25
Average passengers per vessel trip	5.41
Identified fishing locations on maps	29
of which based in Rhode Island	10.5

trend identified in the data was that some respondents did not provide data for their vessels that require VTRs. This is not a problem for this analysis as this effort data is already accounted for by the NOAA databases and summary reports used as a baseline for our subsequent analyses.

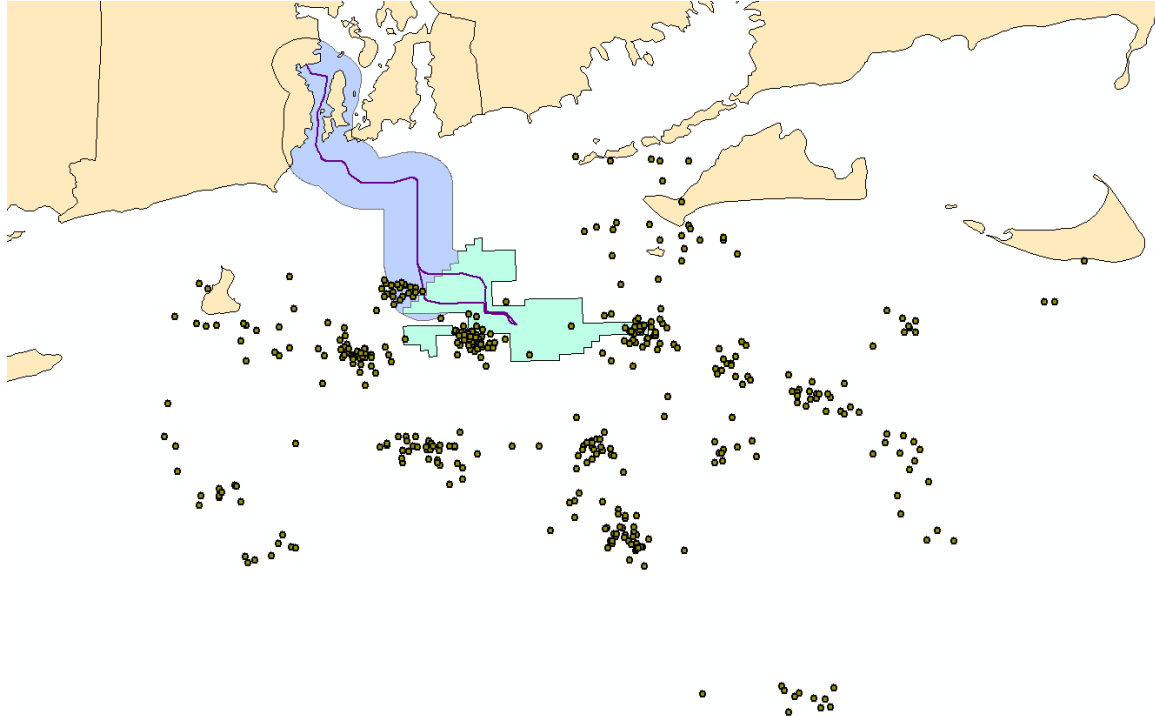


Figure 5. Charter fishing locations, 2017-2021, identified in survey responses.

The number of anglers per year is estimated by multiplying the vessel trip number in a year and the average number of anglers per trip in that year for each vessel, and the results are then summed across vessels by area (WLA, WLA with 5km buffer, or ECRA). Tables 18 and 19 show the annual vessel trips and angler counts in the survey responses for charter vessels based in Rhode Island. The Wind Turbine Generator Area (WTGA) is the area defined by the turbine tower locations and lies within, but does not include all of, the WLA shows in Figure 5. Note that the trips shown for the ECRA (Table 19) are also included in the numbers for the WTGA + 5km buffer (Table 18).

Table 18. Number of Rhode Island-based vessel trips and anglers by year, Revolution Wind areas.

Year	WLA		WTGA + 5km buffer	
	Vessel Trips	Anglers	Vessel Trips	Anglers
2017	21	114	142.5	805
2018	11	63	109	622
2019	14	80	112	646
2020	22.5	74	120.5	608
2021	7	22	138	733
Average	15.1	70.6	124.4	690.8

Table 19. Number of Rhode Island-based vessel trips and anglers by year, Revolution ECRA.

Year	Vessel Trips	Anglers
2017	49	270
2018	24	130
2019	36	207
2020	46	258
2021	56	319
Average	42.2	236.8

Table 20. Revolution Wind area for-hire vessel revenue from NOAA VTR data. Source: NOAA (2021).

Year	Revenue per angler (2019\$)
2008	93.75
2009	100.00
2010	112.57
2011	123.53
2012	117.65
2013	113.21
2014	110.62
2015	105.77
2016	104.24
2017	93.75
2018	80.00
Average	105.01

We use the revenue per angler estimates from NOAA shown in the Table 20 above for our revenue calculation. We recognize that the per angler revenue from charter boats may be an order of magnitude larger than that from party boats. The NOAA data in Table 20 represent an average across both sectors, influenced by the fact that many more people participate in party boat fishing than in charter fishing. For consistency, we convert the average revenue per angler from 2019\$ (\$105.01) to 2020\$ (\$106.22) using the GDP implicit price deflator (2019: 112.3; 2020: 113.6).

The annual revenue for each area is estimated by multiplying the number of anglers (Tables 18 and 19) by the average revenue per angler (\$106.22). The result is then adjusted using a scale factor. For a low-end estimate, the scale factor is the ratio of the number of Rhode Island vessels responding to the survey (24.5) to the number of these vessels for which specific fishing locations were provided (10.5). For a high-end estimate, we increase the scale factor to reflect the estimated total of 100 vessels operating in the survey area (see above), versus the 62 for which survey responses were received. Finally, an economic impact multiplier is used to reflect the overall economic impacts associated with the charter fishing direct revenue. The multiplier is calculated using data in the NOAA report by Lovell *et al.* (2020). The results are shown in Table 21 for the WLA, the WTGA with 5km buffer, and the ECRA.

Table 21. Annual revenue and economic impact from RI-based charter fishing in Revolution Wind areas.

Area	Annual anglers	Revenue per angler (2020\$)	Scale factor	Annual revenue (2020\$)	Impact multiplier	Annual impact (2020\$)
WLA	70.6	106.15	Low: 2.333	17,495	1.622	28,378
			High: 3.763	28,219	1.622	45,772
WTGA+5km buffer	690.8	106.22	Low: 2.333	171,188	1.622	277,667
			High: 3.763	276,117	1.622	447,861
ECRA	236.8	106.15	Low: 2.333	58,682	1.622	95,182
			High: 3.763	94,650	1.622	153,523

As Figure 5 and Table 18 illustrate, there is substantial charter fishing activity just outside the boundary of the Revolution WLA. We assume that the value of charter fishing at the Revolution Wind development areas, including a 5km buffer around the WTGA, is foregone in the construction and decommissioning years of the project, since we expect finfish to leave this area due to construction noise. This is likely an overestimate of the actual impact, since charter fishing that would have taken place in these areas may in fact be carried out elsewhere.

Given the fact that much of the charter fishing around the Revolution WLA takes place outside the WLA footprint, and the 1nm spacing of the turbine towers, we expect that charter fishing boats will be able to operate in and near the WLA with minor adjustments to current practice once construction is complete. We therefore do not expect charter fishing revenue to be materially impacted during the operations phase of the project.

The charter fishing activity in the ECRA (Figure 5) overlaps substantially with that in the 5km buffer around the WTGA. We therefore base our calculation of exposure on the WTGA with 5km buffer only. We use the high-end revenue and impact estimates (\$276,117 and \$447,861/year, respectively), and assume that this value is forgone during the construction and decommissioning years. Using a 5% discount rate, the present value of the two years of effects is about \$277,000 (2020\$) in revenue, and \$450,000 in total impact in Rhode Island.

As noted above, we consider it unlikely that the Revolution Wind development will substantially change the personal recreational fishing activities of Rhode Island boaters.

Conclusions

Based on NOAA data from 2008 to 2019, and adjusting for underreporting of lobster and Jonah crab landings in the VTR data, and for some dockside sales of lobster and Jonah crab, we estimate the average annual value of commercial landings from the Revolution Wind Lease Area to be about 1,510,000 (2020\$). Of this, about \$827,000 is landed in Rhode Island. Including indirect and induced effects, these landings generate average annual economic impacts of \$1.70 million in Rhode Island.

As of early 2023, Revolution Wind has identified more than 20 of the WLA's 100 turbine tower locations as infeasible for development with current technology. These include the nine locations in the southwest corner of the lease area. We estimate that the average annual value of commercial landings in Rhode Island from the Wind Turbine Generator Area (the WLA minus the southwest corner section that will not be developed) is \$760,000, or \$1.56 million including indirect and induced effects.

We estimate the average annual value of commercial landings from the federal waters portion of the Revolution Wind Export Cable Corridor to be about \$128,000. Of this, about \$104,000 is landed in Rhode Island. These landings generate estimated total annual economic impacts of \$214,000 in Rhode Island.

We estimate that a total (lump sum) of \$1,634,000 (2020\$) of commercial fisheries value landed in Rhode Island is potentially exposed to the Revolution Wind development. This accounts for about 55% of the total potentially exposed landed value for Revolution Wind. It includes about \$1,100,000 in direct landed value forgone due to construction activities, \$458,000 from forgone landings during the wind farm's operation, and \$77,000 in present value of foregone landings due to decommissioning.

Rhode Island-based charter fishing revenue exposure to the Revolution Wind development is estimated to have a present value of \$277,000.

Including indirect and induced effects, the potentially affected commercial landings and charter fishing revenue together result in about \$3,921,000 in total (lump sum, 2020\$) present value economic impact in Rhode Island. Table 22 summarizes these values.

There is considerable variability in the baseline data of landings and landed value from the Revolution Wind areas. Baseline future landings will vary due to natural and fisheries-related fluctuations in stocks that are likely to be amplified by climate change effects. There is also uncertainty about the impact of wind farm construction and operation on fish stocks and landings, and about the ways that fishers will adapt their fishing practices in response to wind farm development. We consider our combined estimate of about \$3.9 million in economic impacts to Rhode Island from Revolution Wind development effects on commercial and charter fishing to be a conservative upper bound on likely actual impacts.

Table 22. Estimated Rhode Island fishing industries exposure from Revolution Wind development

Categories of Potential Exposure		RI Direct Landed Value/Revenue (2020\$)
Construction-related effects	WLA+	\$1,058,000
	ECRA	\$60,000
Effects during operations	WLA	\$458,000
	ECRA	---
Decommissioning-related effects	WLA	\$69,000
	ECRA	\$8,000
Subtotal RI commercial direct effects		\$1,652,000
RI for-hire charter fishing direct effects		\$277,000
Total Rhode Island direct effects		\$1,929,000

Categories of Potential Exposure	RI Total Impact with Multipliers (2020\$)
Subtotal RI commercial fishing	\$3,504,000
RI for-hire charter fishing*	\$450,000
Total Rhode Island impacts	\$3,954,000

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Appendix

Table A1. Average annual landings by species from the Revolution WLA, 2008-2019.

Note: lobster and Jonah crab data in this table have not been adjusted for landings not reported via VTR.

Species	Mean		Standard Deviation	
	Value/year (2020 \$)	Landings/year (lbs)	Value/year (2020 \$)	Landings/year (lbs)
ALL_OTHERS	130,334	197,741	112,472	195,923
AMBERJACK, SPECIES NOT SPECIFIED	0	0	0	0
BLACK BELLIED ROSEFISH	0	0	0	0
BLACK SEA BASS	22,262	4,404	18,654	2,952
BLUEFISH	2,310	3,477	780	1,592
BONITO	326	113	505	187
BUTTERFISH	8,895	12,452	6,182	8,714
CLAM, SURF/BUSHEL	0	0	0	0
COBIA	0	0	0	0
COD	18,270	5,910	19,016	5,077
CRAB, BLUE/BUSHEL	32	29	88	78
CRAB, CANCER	0	0	0	0
CRAB, HORSESHOE	7	7	12	13
CRAB, JONAH	18,145	23,562	8,115	9,895
CRAB, ROCK/BUSHEL	2,395	3,837	1,718	2,663
CRAB, SPECIES NOT SPECIFIED	15	24	18	30
CREVALLE	0	0	0	0
CROAKER, ATLANTIC	18	40	31	68
CUNNER	235	88	321	106
CUSK	0	0	0	0
DOGFISH, SMOOTH	318	536	216	444
DOGFISH, SPINY	10,054	44,384	8,744	32,131
DOLPHIN FISH / MAHI-MAHI	0	0	0	0
DRUM, BLACK	0	0	0	0
EEL, AMERICAN	3	3	4	4
EEL, CONGER	96	137	80	120
EEL, SPECIES NOT SPECIFIED	11	12	13	8
FLOUNDER, AMERICAN PLAICE /DAB	57	28	90	41
FLOUNDER, FOURSPOT	6	12	10	17
FLOUNDER, SAND-DAB / WINDOWPANE / BRILL	93	131	178	256
FLOUNDER, SOUTHERN	0	0	0	0
FLOUNDER, SUMMER / FLUKE	49,005	13,553	17,902	6,461
FLOUNDER, WINTER / BLACKBACK	13,840	4,887	11,281	4,050
FLOUNDER, WITCH / GRAY SOLE	124	45	127	42
FLOUNDER, YELLOWTAIL	14,230	6,922	14,112	7,863
FLOUNDER,NOT SPECIFIED	0	0	0	0
HADDOCK ROE	194	184	396	425
HAKE, OFFSHORE	434	579	1,066	1,456

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HAKE, RED / LING	5,566	19,206	2,296	9,996
HAKE, SILVER / WHITING	55,489	93,848	29,944	64,440
HAKE, WHITE	1,135	840	3,414	2,564
HAKE, SPOTTED	0	0	0	0
HALIBUT, ATLANTIC	23	2	68	7
HARVEST FISH	0	0	0	0
HERRING, ATLANTIC	43,955	332,643	49,621	395,365
HERRING, BLUE BACK	0	0	0	0
JOHN DORY	39	29	48	35
LOBSTER, AMERICAN	216,526	39,033	90,284	15,007
MACKEREL, ATLANTIC	10,537	63,096	29,303	198,693
MACKEREL, CHUB	8	8	29	29
MACKEREL, KING	0	0	0	0
MACKEREL, SPANISH	1	1	3	1
MENHADEN	5	28	12	54
MONK	110,376	65,752	52,747	23,647
MULLETS	5	5	15	16
OCEAN POUT	6	6	15	16
OTHER FINFISH	0	0	0	1
PERCH, WHITE	0	0	0	0
POLLOCK	19	17	21	21
PUFFER, NORTHERN	0	0	0	0
QUAHOGS/BUSHEL	0	0	0	0
RED PORGY	0	0	0	0
REDFISH / OCEAN PERCH	5	6	11	14
SCALLOPS, BAY/SHELLS	0	0	0	0
SCALLOPS/BUSHEL	161,804	14,982	155,706	16,242
SCORPIONFISH	1	1	3	2
SCUP / PORGY	32,306	45,048	11,739	20,089
SEA RAVEN	95	59	107	65
SEA ROBINS	16	73	13	51
SEATROUT, SPECIES NOT SPECIFIED	7	11	10	13
SHAD, AMERICAN	0	1	1	1
SHAD, HICKORY	0	0	0	0
SHARK, SANDBAR	0	0	0	0
SHARK, THRESHER	31	22	106	78
SHEEPSHEAD	0	0	0	0
SKATE WINGS	93,077	351,557	45,462	161,671
SKATE WINGS, CLEARNOSE	2	7	6	22
SPOT	1	2	3	7
SQUID / ILLEX	444	696	942	1,385
SQUID / LOLIGO	76,235	57,379	59,273	46,255
STARGAZER, NORTHERN	0	0	0	0
STRIPED BASS	1,737	369	2,706	558
SWORDFISH	0	0	0	0
TAUTOG	349	97	185	51
TILEFISH	0	0	0	0
TILEFISH, BLUELINE	1	1	2	1

Fishery Impacts in RI for Revolution Wind

TILEFISH, GOLDEN	614	171	575	148
TILEFISH, SAND	0	0	0	0
TRIGGERFISH	65	38	145	67
TUNA, ALBACORE	27	22	61	50
TUNA, LITTLE	25	44	36	70
TUNA, SKIPJACK	0	0	0	0
WEAKFISH	181	84	123	55
WHELK, CHANNELED/BUSHEL	8,540	997	15,529	1,785
WHELK, KNOBBED/BUSHEL	31	11	22	11
WHELK, LIGHTNING	0	0	0	0
WHELK, WAVED	0	0	0	0
WHITING, KING / KINGFISH	358	328	765	683
WOLFFISH / OCEAN CATFISH	1	1	3	2

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Table A2. Average annual landings by species from the Revolution Wind ECRA, 2008-2019.

Note: lobster and Jonah crab data in this table have not been adjusted for landings not reported via VTR. (These data are for the 10km wide ECRA, not the 180 m wide ECC.)

Species	Mean		Standard Deviation	
	Value/year (2020 \$)	Landings/year (lbs)	Value/year (2020 \$)	Landings/year (lbs)
ALL_OTHERS	46,080	66,526	38,875	63,435
AMBERJACK, SPECIES NOT SPECIFIED	0	0	0	0
BLACK BELLIED ROSEFISH	0	0	0	0
BLACK SEA BASS	51,635	11,399	13,823	3,401
BLUEFISH	44,173	60,668	19,627	22,712
BONITO	7,686	2,684	4,584	1,714
BUTTERFISH	49,194	61,825	22,844	30,012
CLAM, SURF/BUSHEL	0	0	0	0
COBIA	9	2	30	8
COD	10,928	3,611	8,919	2,241
CRAB, BLUE/BUSHEL	138	88	287	170
CRAB, CANCER	0	113	0	249
CRAB, HORSESHOE	137	65	364	139
CRAB, JONAH	27,758	39,019	16,448	22,516
CRAB, ROCK/BUSHEL	7,491	12,867	3,357	5,756
CRAB, SPECIES NOT SPECIFIED	76	127	142	251
CREVALLE	0	0	0	0
CROAKER, ATLANTIC	46	73	103	153
CUNNER	257	94	232	64
CUSK	0	0	0	0
DOGFISH, SMOOTH	3,324	5,291	2,663	4,485
DOGFISH, SPINY	30,069	112,462	28,624	95,710
DOLPHIN FISH / MAHI-MAHI	3	3	11	9
DRUM, BLACK	0	0	0	0
EEL, AMERICAN	4	6	9	12
EEL, CONGER	339	475	365	525
EEL, SPECIES NOT SPECIFIED	71	68	103	79
FLOUNDER, AMERICAN PLAICE /DAB	93	47	194	100
FLOUNDER, FOURSPOT	0	1	1	2
FLOUNDER, SAND-DAB / WINDOWPANE / BRILL	77	124	147	250
FLOUNDER, SOUTHERN	0	0	0	0
FLOUNDER, SUMMER / FLUKE	211,016	53,290	40,767	14,563
FLOUNDER, WINTER / BLACKBACK	18,821	7,382	12,715	5,129
FLOUNDER, WITCH / GRAY SOLE	142	52	180	66
FLOUNDER, YELLOWTAIL	8,546	3,988	6,346	3,121
FLOUNDER,NOT SPECIFIED	0	0	0	0
HADDOCK ROE	253	203	515	394
HAKE, OFFSHORE	271	411	617	863
HAKE, RED / LING	8,657	29,436	3,608	12,808
HAKE, SILVER / WHITING	87,995	151,706	67,318	126,264
HAKE, WHITE	1,320	958	3,705	2,817
HAKE,SPOTTED	0	0	0	0
HALIBUT, ATLANTIC	28	3	95	10

Fishery Impacts in RI for Revolution Wind

HARVEST FISH	0	0	0	0
HERRING, ATLANTIC	388,559	2,922,015	373,921	3,036,624
HERRING, BLUE BACK	1,017	1,760	3,066	4,801
JOHN DORY	40	31	41	31
LOBSTER, AMERICAN	383,874	70,701	201,911	33,195
MACKEREL, ATLANTIC	25,430	103,362	31,477	191,332
MACKEREL, CHUB	4	22	12	75
MACKEREL, KING	0	0	0	0
MACKEREL, SPANISH	90	116	256	330
MENHADEN	140	558	207	884
MONK	30,036	16,800	13,602	6,056
MULLETS	0	0	0	0
OCEAN POUT	17	18	50	53
OTHER FINFISH	0	2	0	5
PERCH, WHITE	0	0	0	0
POLLOCK	23	21	27	28
PUFFER, NORTHERN	0	0	0	0
QUAHOGS/BUSHEL	0	0	0	0
RED PORGY	0	0	0	0
REDFISH / OCEAN PERCH	0	0	0	0
SCALLOPS, BAY/SHELLS	0	0	0	0
SCALLOPS/BUSHEL	63,070	5,662	44,171	3,672
SCORPIONFISH	1	1	3	2
SCUP / PORGY	172,656	263,387	60,815	115,190
SEA RAVEN	389	243	457	277
SEA ROBINS	447	1,493	432	1,138
SEATROUT, SPECIES NOT SPECIFIED	102	302	112	372
SHAD, AMERICAN	2	3	3	4
SHAD, HICKORY	2	4	4	8
SHARK, SANDBAR	0	0	0	0
SHARK, THRESHER	26	24	91	84
SHEEPSHEAD	0	0	0	0
SKATE WINGS	117,102	661,784	63,833	326,533
SKATE WINGS, CLEARNOSE	2	7	4	19
SPOT	26	54	89	186
SQUID / ILLEX	1,093	2,811	3,359	9,206
SQUID / LOLIGO	216,885	158,965	113,278	87,285
STARGAZER, NORTHERN	0	0	0	0
STRIPED BASS	13,126	2,852	13,715	3,059
SWORDFISH	0	0	0	0
TAUTOG	6,041	1,909	2,196	849
TILEFISH	0	0	0	0
TILEFISH, BLUELINE	1	1	3	2
TILEFISH, GOLDEN	432	127	571	167
TILEFISH, SAND	0	0	0	0
TRIGGERFISH	117	76	113	76
TUNA, ALBACORE	1,460	1,123	2,766	2,045
TUNA, LITTLE	1,264	2,532	1,514	3,192
TUNA, SKIPJACK	0	0	0	0
WEAKFISH	1,929	891	1,602	727
WHELK, CHANNELED/BUSHEL	38,339	4,686	37,045	3,999
WHELK, KNOBBED/BUSHEL	2,172	672	4,624	1,265
WHELK, LIGHTNING	6	3	22	9

Fishery Impacts in RI for Revolution Wind

WHELK, WAVED	0	0	0	0
WHITING, KING / KINGFISH	1,933	1,683	2,263	1,833
WOLFFISH / OCEAN CATFISH	10	6	35	20

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Table A3. Complete species list (including those in ALL_OTHERS).

Species	Species
ALEWIFE	OCTOPUS, SPECIES NOT SPECIFIED
AMBERJACK, SPECIES NOT SPECIFIED	OTHER FINFISH
AMBERJACK, GREATER	PERCH, SAND
ANCHOVY, BAY	PERCH, WHITE
ARGENTINES, SPECIES NOT SPECIFIED	POLLOCK
ATLANTIC SALMON	POMPANO, COMMON
BLACK BELLIED ROSEFISH	PORGY, JOLTHEAD
BLACK SEA BASS	PUFFER, NORTHERN
BLUE RUNNER	QUAHOGS/BUSHEL
BLUEFISH	RED PORGY
BONITO	REDFISH / OCEAN PERCH
BULLHEADS	RIBBONFISH
BUTTERFISH	ROUGH SCAD
CLAM, ARCTIC SURF	SCALLOPS, BAY/SHELLS
CLAM, RAZOR	SCALLOPS/BUSHEL
CLAM, SPECIES NOT SPECIFIED	SCORPIONFISH
CLAM, SURF/BUSHEL	SCUP / PORGY
COBIA	SEA RAVEN
COD, MILT	SEA ROBINS
CRAB, BLUE/BUSHEL	SEA URCHINS
CRAB, CANCER	SEATROUT, SPECIES NOT SPECIFIED
CRAB, GREEN/BUSHEL	SHAD, AMERICAN
CRAB, HERMIT	SHAD, GIZZARD
CRAB, HORSESHOE	SHAD, HICKORY
CRAB, JONAH	SHARK, ANGEL
CRAB, LADY	SHARK, BLACKTIP
CRAB, RED/BUSHEL	SHARK, BLUE
CRAB, ROCK/BUSHEL	SHARK, MAKO, LONGFIN
CRAB, SPECIES NOT SPECIFIED	SHARK, MAKO, SHORTFIN
CRAB, SPIDER	SHARK, MAKO, SPECIES NOT SPECIFIED
CREVALLE	SHARK, NOT SPECIFIED
CROAKER, ATLANTIC	SHARK, NURSE
CRUSTACEANS, SPECIES NOT SPECIFIED	SHARK, PORBEAGLE
CUNNER	SHARK, SANDBAR
CUSK	SHARK, THRESHER
CUTLASSFISH, ATLANTIC	SHARK, THRESHER, BIGEYE
DOGFISH, CHAIN	SHARK, TIGER
DOGFISH, SMOOTH	SHARK, WHITE
DOGFISH, SPECIES NOT SPECIFIED	SHARK, WHITETIP
DOGFISH, SPINY	SHEEPSHEAD
DOLPHIN FISH / MAHI-MAHI	SHRIMP (MANTIS)
DRUM, BLACK	SHRIMP (PANAID)
DRUM, SPECIES NOT SPECIFIED	SHRIMP (PANDALID)
EEL, AMERICAN	SHRIMP, SPECIES NOT SPECIFIED
EEL, CONGER	SILVERSIDES, ATLANTIC
EEL, SPECIES NOT SPECIFIED	SKATE WINGS
FLOUNDER, AMERICAN PLAICE /DAB	SKATE WINGS, CLEARNOSE
FLOUNDER, FOURSPOT	SNAIL, MOON
FLOUNDER, SAND-DAB / WINDOWPANE / BRILL	SNAPPER, OTHER
FLOUNDER, SOUTHERN	SNAPPER, RED

FLOUNDER, SUMMER / FLUKE
FLOUNDER, WINTER / BLACKBACK
FLOUNDER, WITCH / GRAY SOLE
FLOUNDER, YELLOWTAIL
FLOUNDER,NOT SPECIFIED
GROUPE, OTHER
GROUPE, SNOWY
HADDOCK ROE
HAKE, OFFSHORE
HAKE, RED / LING
HAKE, SILVER / WHITING
HAKE, WHITE
HAKE,SPOTTED
HALIBUT, ATLANTIC
HARD QUAHOG
HARVEST FISH
HERRING, ATLANTIC
HERRING, BLUE BACK
HERRING,ATLANTIC THREAD
HERRING/SARDINES,SPECIES NOT SPECIFIED
JACK,ALMACO
JOHN DORY
LADYFISH
LOBSTER, AMERICAN
LUMPFISH
MACKEREL, ATLANTIC
MACKEREL, CHUB
MACKEREL, FRIGATE
MACKEREL, KING
MACKEREL, SPANISH
MARLIN, BLUE
MENHADEN
MOLLUSKS,SPECIES NOT SPECIFIED
MONK LIVERS
MULLETS
NEEDLEFISH, ATLANTIC
OCEAN POUT
OCEAN SUNFISH / MOOLA
SPADEFISH
SPOT
SQUID / ILLEX
SQUID / LOLIGO
SQUID, SPECIES NOT SPECIFIED
SQUIRRELFISH
STARFISH
STARGAZER,NORTHERN
STING RAYS,SPECIES NOT SPECIFIED
STRIPED BASS
STURGEON, ATLANTIC
SWORDFISH
TAUTOG
TILEFISH
TILEFISH, BLUELINE
TILEFISH, GOLDEN
TILEFISH, SAND
TOADFISH, OYSTER
TRIGGERFISH
TRIGGERFISH,GRAY
TUNA, ALBACORE
TUNA, BIG EYE
TUNA, BLUEFIN
TUNA, LITTLE
TUNA, SKIPJACK
TUNA, SPECIES NOT SPECIFIED
TUNA, YELLOWFIN
TURTLE, LEATHERBACK
WAHOO
WEAKFISH / SQUETEAGUE / GRAY SEA TROUT
WEAKFISH, SPOTTED / SPOTTED SEA TROUT
WHELK, CHANNELED/BUSHEL
WHELK, KNOBBED/BUSHEL
WHELK, LIGHTNING
WHELK,WAVED
WHITING, KING / KINGFISH
WOLFFISH / OCEAN CATFISH

Table A4. Average annual landings from Revolution WLA by port.

Port	Mean		Standard Deviation	
	Value/year (2020 \$)	Landings/year (lbs)	Value/year (2020 \$)	Landings/year (lbs)
ALL_OTHERS	18,214	53,501	26,881	144,557
ATLANTIC CITY	0	0	0	0
BARNEGAT	0	0	0	0
BARNSTABLE	63	27	217	95
BEAUFORT	1,792	615	2,892	981
BELFORD	0	0	0	0
BOSTON	599	2,560	1,497	8,273
BRISTOL	3	2	10	5
CAPE MAY	387	607	780	1,506
CHATHAM	1,248	588	2,552	1,218
CHILMARK	12,766	2,358	13,169	2,352
CHINCOTEAGUE	0	0	0	0
DAVISVILLE	923	1,513	2,454	4,933
FAIRHAVEN	13,186	10,109	9,469	8,496
FALL RIVER	4,095	16,039	4,393	18,313
FALMOUTH	165	19	571	67
FREEPORT	0	0	0	0
GLOUCESTER	887	5,088	1,929	11,706
HAMPTON	1,827	792	2,522	1,245
HAMPTON BAY	0	0	0	0
HARWICHPORT	2,286	271	7,861	884
HYANNIS	0	0	0	0
ISLIP	0	0	0	0
JAMESTOWN	0	0	0	0
LITTLE COMPTON	118,582	117,951	40,381	46,312
LONG BEACH	0	0	0	0
MENEMSHA	4,972	901	5,934	1,098
MONTAUK	16,661	10,885	8,914	6,378
MOREHEAD CITY	0	0	0	0
MORICHES	0	0	0	0
NANTUCKET	80	18	278	62
NEW BEDFORD	345,249	531,251	148,331	361,113
NEW LONDON	5,884	5,633	6,004	7,226
NEW SHOREHAM	235	78	164	89
NEWPORT	61,342	177,188	35,395	141,446
NEWPORT NEWS	1,717	949	4,413	2,665
NORTH KINGSTOWN	0	0	0	0
OCEAN CITY	0	0	0	0
ORIENTAL	0	0	0	0
OTHER NASSAU	0	0	0	0
OTHER	0	0	0	0
WASHINGTON(COUNTY)				
POINT JUDITH	395,422	372,813	94,641	117,967

POINT LOOKOUT	0	0	0	0
POINT PLEASANT	2,347	938	4,271	1,659
SANDWICH	40	16	139	55
SHINNECOCK	29	24	100	84
STONINGTON	7,162	4,144	5,045	3,117
TIVERTON	6,583	12,722	6,389	14,226
VINEYARD HAVEN	40	6	140	19
WANCHESE	263	103	618	243
WESTPORT	65,122	25,925	32,456	12,768
WILDWOOD	0	0	0	0
WOODS HOLE	3,131	525	6,114	961

Table A5. Average annual landings from ECRA (note: not ECC) by ports.

Port	Mean		Standard Deviation	
	Value/year (2020 \$)	Landings/year (lbs)	Value/year (2020 \$)	Landings/year (lbs)
ALL_OTHERS	62,948	182,678	81,757	317,122
ATLANTIC CITY	0	0	0	0
BARNEGAT	0	0	0	0
BARNSTABLE	126	89	329	259
BEAUFORT	1,221	419	1,825	625
BELFORD	0	0	0	0
BOSTON	2,538	15,452	8,792	53,527
BRISTOL	1,395	962	3,600	2,644
CAPE MAY	9,058	2,169	27,487	6,358
CHATHAM	30	15	105	50
CHILMARK	1,217	429	1,788	850
CHINCOTEAGUE	0	0	0	0
DAVISVILLE	2,046	4,668	6,299	15,793
FAIRHAVEN	3,002	2,286	3,403	2,832
FALL RIVER	16,808	53,961	19,239	67,519
FALMOUTH	0	0	0	0
FREEPORT	0	0	0	0
GLOUCESTER	3,443	19,899	10,049	57,975
HAMPTON	1,497	592	2,028	790
HAMPTON BAY	0	0	0	0
HARWICHPORT	0	0	0	0
HYANNIS	0	0	0	0
ISLIP	0	0	0	0
JAMESTOWN	4,460	941	15,450	3,258
LITTLE COMPTON	187,366	210,927	102,231	151,068
LONG BEACH	0	0	0	0
MENEMSHA	836	145	1,429	231
MONTAUK	15,159	9,702	10,580	7,123
MOREHEAD CITY	0	0	0	0
MORICHES	0	0	0	0
NANTUCKET	83	16	287	55

Fishery Impacts in RI for Revolution Wind

NEW BEDFORD	246,773	1,561,473	175,557	1,852,712
NEW LONDON	6,776	9,223	8,571	14,053
NEW SHOREHAM	409	250	306	484
NEWPORT	287,521	663,483	140,564	436,885
NEWPORT NEWS	939	525	2,208	1,328
NORTH KINGSTOWN	24,297	22,854	56,755	53,757
OCEAN CITY	0	0	0	0
ORIENTAL	0	0	0	0
OTHER NASSAU	0	0	0	0
OTHER	0	0	0	0
WASHINGTON(COUNTY)				
POINT JUDITH	1,098,000	1,879,144	181,053	928,417
POINT LOOKOUT	0	0	0	0
POINT PLEASANT	2,344	914	3,609	1,375
SANDWICH	0	0	0	0
SHINNECOCK	2	2	8	8
STONINGTON	6,847	5,034	4,456	3,862
TIVERTON	5,735	9,331	5,028	10,844
VINEYARD HAVEN	0	0	0	0
WANCHESE	195	80	481	200
WESTPORT	33,777	12,999	9,665	5,127
WILDWOOD	0	0	0	0
WOODS HOLE	1,044	204	2,527	494

Table A5. Complete list of ports (including those in ALL_OTHERS).

AMAGANSETT	NEW YORK CITY
ATLANTIC CITY	NEWINGTON
BARNEGAT	NEWPORT
BARNSTABLE	NEWPORT NEWS
BASS RIVER	NIANTIC
BEAUFORT	NOANK
BELFORD	NORTH KINGSTOWN
BOSTON	OCEAN CITY
BRISTOL	OLD SAYBROOK
BROAD CHANNEL	ORIENT
BROOKLYN	ORIENTAL
CAPE MAY	OTHER BEAUFORT(COUNTY)
CHATHAM	OTHER BRONX
CHESAPEAKE BEACH	OTHER CAPE MAY
CHILMARK	OTHER CITY OF HAMPTON
CHINCOTEAGUE	OTHER CURRITUCK
CITY OF SEAFORD	OTHER DUKES
DANVERS	OTHER MAINE
DARTMOUTH	OTHER NEWPORT
DAVISVILLE	OTHER NORTHAMPTON

DUXBURY	OTHER NY
EAST HAMPTON	OTHER SUFFOLK
ENGELHARD	OTHER VIRGINIA
FAIRHAVEN	OTHER WASHINGTON
FALL RIVER	OTHER WASHINGTON(COUNTY)
FALMOUTH	OYSTER
FREEPORT	POINT JUDITH
GLOUCESTER	POINT LOOKOUT
GREENPORT	POINT PLEASANT
GROTON	PORTLAND
GUILFORD	PROVIDENCE
HAMPTON	PROVINCETOWN
HAMPTON BAY	PT. PLEASANT
HARWICHPORT	ROCKLAND
HIGHLANDS	ROCKPORT
HOBUCKEN	SACO
HYANNIS	SANDWICH
ISLIP	SHELTER ISLAND
JAMESTOWN	SHINNECOCK
LITTLE COMPTON	SMITHTOWN
LONG BEACH	SOUTH KINGSTOWN
MANASQUAN	SOUTHOLD
MARBLEHEAD	STONINGTON
MARSHFIELD	SWAN QUARTER
MASTIC	TIVERTON
MATTITUCK	VINALHAVEN
MENEMSHA	VINEYARD HAVEN
MONMOUTH	VIRGINIA BEACH
MONTAUK	WAKEFIELD
MONTVILLE	WANCHESE
MOREHEAD CITY	WARREN
MORICHES	WATERFORD
MYSTIC	WESTERLEY
NANTUCKET	WESTPORT
NEW BEDFORD	WILDWOOD
NEW LONDON	WOODS HOLE
NEW SHOREHAM	

Appendix 8 – Revolution Wind Mitigation and Modification Memo

Memo

To Jeffrey Willis, Executive Director
Copy Kevin A. Sloan, Coastal Policy Analyst, CRMC; David Ciochetto, Principal Ocean Engineer, CRMC; Justin Skenyon, Principal Ocean Engineer, CRMC; Melanie Gearon, Head of Northeast Permitting, Orsted North America; Megan Eakin, Permit Manager, Revolution Wind; Kenneth Bowes, Vice President, Offshore Wind Siting & Permitting, Eversource; Marvin Bellis, Esq., Eversource; Robin L. Main, Esq., Hinckley Allen
From Kellen Ingalls, Project Development Director, Revolution Wind
Date April 19, 2023
Regarding File No. 2021-06-029, Revolution Wind Modifications and Mitigation Proposal

The Coastal Resources Management Council (CRMC), Revolution Wind, LLC (Revolution Wind), and the Fishermen's Advisory Board (FAB) have engaged in mitigation negotiations pursuant to the enforceable policies of the Rhode Island Special Area Management Plan (Ocean SAMP) for approximately five months. As CRMC prepares its recommendation to the Council for a public meeting on April 25, 2023, Revolution Wind provides this memorandum to summarize (1) the numerous modifications made to the Revolution Wind project in federal waters to avoid and/or minimize any potential adverse impacts to commercial and recreational fisheries and (2) the comprehensive mitigation package Revolution Wind has proposed to address any remaining potential impacts. Revolution Wind has listened to the concerns of the fishing community and addressed them through meaningful modifications to the Revolution Wind project. The project before CRMC represents the culmination of years of engagement with federal and state agencies, the FAB and greater fishing community, and other stakeholders, and it incorporates the work of countless subject matter experts relying on the best available science.

Specifically, Revolution Wind has committed to the following project modifications and mitigations:

- Adoption of a uniform 1 nautical mile by 1 nautical mile grid layout for wind turbine generators (WTGs) throughout the Massachusetts/Rhode Island Wind Energy Area, which Revolution Wind committed to in its Construction and Operations Plan submitted to the Bureau of Ocean Energy Management (BOEM);
- Commitment to less than 79 11-megawatt WTGs where the design envelope in the Construction and Operations Plan for the Project was up to 100 WTGs. This decrease in WTGs and micrositing efforts will result in less of an impact on the benthic environment;
- Extensive use of fishing gear avoidance tactics, including onboard gear observers, avoidance training, and scout vessels;

- Development of a first-in-the industry gear loss claim process that compensates fishermen for both lost or damaged gear and associated business interruption. As a result of the avoidance tactics, the gear loss claim program has received very few claims. Further, in connection with Revolution Wind's application to CRMC for a Category B Assent, Revolution Wind agreed to work with the FAB to set up a separate working group to discuss improvements to and simplification of this existing gear loss program and claims process. Revolution Wind already has reached out to FAB representatives to initiate this working group. Revolution Wind also agreed to add compensation for reasonable claim preparation costs incurred by fishermen;
- Creation and implementation of a comprehensive fisheries communication plan that incorporates input from state agencies and the fishing community;
- Employment of fisheries liaisons to serve as points of contact for local fishermen;
- Development of a robust Fisheries Monitoring Plan based on extensive feedback from CRMC, other federal and state agencies, fishermen and other users of the Revolution Wind Project area;
- Commitment to targeting sufficient cable burial depth;
- Commitment to limiting secondary cable protection to the extent practicable;
- Commitment to relocating boulders to ensure that sensitive benthic habitats are preserved to the extent possible and that when moved, boulders do not negatively impact essential fish habitat, where technically feasible. Revolution Wind will relocate boulders to areas with similar bottom (seabed) types within the 50m surveyed cable corridors where practicable and will avoid placing them in sensitive or complex hard bottom habitats. Revolution Wind also will group boulders together where technically practicable, in order to prevent new hangs.
- Adoption of pile-driving noise attenuation measures based on modeled 10dB broadband underwater noise reduction levels;
- Commitment to sound source verification measurements during foundation pile driving to verify in-situ underwater noise levels;
- Adherence to time-of-year restrictions for construction to minimize impacts to certain marine species; and
- Incorporation of automatic identification system, enhanced cellular, and very-high frequency coverage into all WTGs.

These project modifications are substantial. They demonstrate Revolution Wind's responsiveness to the commercial and recreational fishing communities for the continued long-term use of the project area by fishermen. By working with CRMC, Revolution Wind has eliminated or minimized significantly any potential adverse impacts of the project to commercial and recreational fisheries.

Notwithstanding these extensive modifications and mitigations, Revolution Wind has recognized that aspects of the project in federal waters, particularly construction and decommissioning, may present some potential impacts that require additional mitigation. Revolution Wind therefore engaged the Woods Hole Oceanographic Institution (WHOI) to examine potential impacts to fisheries from the Revolution Wind project in federal waters and provide an economic assessment of such impacts.

In addition, the Revolution Wind team has worked with the FAB's consultant and incorporated feedback from him and the FAB to account for concerns raised about uncertainty of impacts during the project's operations. Specifically, Revolution Wind has agreed to conduct a first-of-its-kind study that will verify estimated financial impacts to commercial fishing from the Revolution Wind project during operations. Revolution Wind also has incorporated the draft BOEM guidance as a basis for estimating the operational impacts of the wind farm, including a "ramp down" period after construction to reflect a period of adjustment. The study and "ramp down" adjustment account for and address the uncertainties raised by the FAB and fishing community about post-construction impacts. As a result, Revolution Wind's mitigation proposal has evolved and incorporates this assessment into its compensatory mitigation proposal described below.

With this comprehensive mitigation proposal, along with the project modifications, Revolution Wind respectfully submits that it has met the Ocean SAMP's requirement to "modify the proposal to avoid and/or mitigate" any "potential adverse impacts." See 650 RICR §§ 20-05-11.10.1(C), (F).

Specifically, Revolution Wind's compensatory mitigation package consists of the following elements:

- Direct Compensatory Mitigation: Revolution Wind will provide \$12,000,000 (NPV) as direct financial mitigation to Rhode Island fishermen operating in the Revolution Wind lease area and export cable areas in federal waters. This offer represents an approximate 300 percent increase over WHOI's conservative impact analysis and includes the following:
 - An upward adjustment to the baseline data for lobster and Jonah Crab;
 - A match of the loss percentages from BOEM's draft guidance of 100 percent in the first year after construction, 80 percent in year 2, 70 percent in year 3, 60 percent in year 4, and 50 percent in year 5;
 - Additional compensation equal to a 5 percent loss in landed value annually after year 5 as assessed in the WHOI impact analysis; and
 - WHOI's economic multipliers that go beyond what is recommended within BOEM's draft guidance.
- At the request of the FAB, Revolution Wind has agreed to establish a Rhode Island Fishermen's Future Viability Trust to hold the funds and establish a claims process to

manage and process compensation claims for commercial and for-hire charter fishing operations for mitigation of direct losses/impacts arising from the construction, operation, and decommissioning of the Revolution Wind project.

- Similar to what Revolution Wind agreed to in connection with its Category B application, Revolution Wind will agree to a per-day adjustment, up or down, to the direct compensation amount based on the actual days of active installation of the project during construction.
- Impacts Study: As indicated above, Revolution Wind has worked with the FAB's consultant to develop a reasonable and scientifically defensible study intended to evaluate the effects of the project's operation. Revolution Wind will fund this study up to an amount of \$300,000. If the study concludes that the estimated actual losses to commercial and for-hire/charter fisheries are greater than the anticipated potential losses, Revolution Wind will agree to an adjustment mechanism to pay the difference to the Trust, up to a cap of \$5,000,000. If the study concludes that estimated actual losses are less than the anticipated potential losses, the Trust will pay the difference to Revolution Wind, subject to a cap of \$2,500,000.
- Coastal Community Fund: Revolution Wind will provide \$300,000 for the Rhode Island Coastal Community Fund established by the Orsted/Eversource JV to benefit the fishing industry and Rhode Island's coastal communities through grants.

In addition to this compensatory mitigation, Revolution Wind also has set aside approximately \$333,333 (1/3 of a regional \$1,000,000 fund) for the Rhode Island Navigational Enhancement and Training Program. This is a voucher program to provide eligible fishermen with pulse compression radar systems and AIS transceivers, if they do not already possess them. The Orsted/Eversource JV has preapproved several retailers for participation in the voucher program and various eligible equipment models. Revolution Wind also welcomes input from the fishing community on retailers. The program also provides for fishermen to attend a professional training program of their choice and participate in a session of Orsted's wind farm simulator.

Together, these components represent a total compensatory mitigation package of \$12,933,333 for Rhode Island commercial and recreational fisheries.

Throughout the mitigation negotiation discussions, Revolution Wind has followed the evidence-based decision-making approach of the Ocean SAMP using best available science and modeling tools. Revolution Wind has submitted extensive documentation demonstrating its data-driven, evidence-based commitment to project design, modification, and mitigation, which supports that Revolution Wind has modified and/or mitigated any potential adverse effects to the Rhode Island commercial and recreational fisheries from the Revolution Wind project in federal waters. Because Revolution Wind has shown that its project is consistent with CRMC's applicable enforceable policies, Revolution Wind respectfully requests that CRMC issue its concurrence with Revolution Wind's federal consistency certification.