CRMC File No. 2021-09-036

RI CRMC Federal Consistency Review of the Sunrise Wind Project

Staff Recommendation for Concurrence

August 22, 2023

Table of Acronyms

AC	Alternating current
BOEM	Bureau of Ocean Energy Management
CRMC	Coastal Resources Management Council
CZMA	Coastal Zone Management Act
COP	Construction and Operation Plan
DEIS	Draft Environmental Impact Statement
EPA	Environmental Protection Agency
FAB	Fishermen's Advisory Board
GLD	Geographic Location Description
HAB	Habitat Advisory Board
IAC	Inter-array cable(s)
MW	Megawatt
NMFS	(NOAA) National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NYSERDA	New York State Energy Research and Development Authority
OCM	(NOAA) Office for Coastal Management
OCS	Outer Continental Shelf
OCS-DC	Offshore direct current converter station
OREC	Offshore Wind Renewable Energy Certificate
PDE	Project Design Envelope
RFMC	Regional Fishery Management Council
ROD	Record of Decision
SAMP	Special Area Management Plan
SRWF	Sunrise Wind Farm
UXO	Unexploded Ordinance
WHOI	Woods Hole Oceanographic Institution

Table of Contents

1 Project Description

The Rhode Island Coastal Resources Management Council (CRMC) has completed its Coastal Zone Management Act (CZMA) federal consistency review of Sunrise Wind, LLC's (Sunrise Wind or Developer) proposed Sunrise Wind Farm (SRWF) offshore wind renewable energy project within Bureau of Ocean Energy Management (BOEM) Lease Area OCS-A 0487.[1] The SRWF Construction and Operation Plan (COP) project design envelope (PDE) is based on an operating capacity ranging between 924 megawatts (MW) and 1,034 MW.[2] The SRWF project is required to supply between 880 MW and 924 MW to the state of New York under an Offshore Wind Renewable Energy Certificate (OREC) agreement with the New York State Energy Research and Development Authority (NYSERDA).[3] The SRWF PDE initially included up to 122 wind turbine generating positions (WTG) and was subsequently reduced to include up to 94 WTGs at 102 potential positions with a nameplate capacity of 11 MWs[4] (this number has since been further reduced)[5], up to 180 miles of alternating current (AC) inter-array cables (IAC), one offshore direct current converter station (OCS-DC), and one 320-kV DC export cable installed in a 104.6-mile-long cable corridor.[6]

The final buildout will include up to 87 WTG positions for the installation of 84 WTGs and one OCS-DC converter station.[7] The export cable will make landfall in the Town of Brookhaven, Long Island, New York and will not enter Rhode Island state waters. The SRWF lease area is approximately 109,952 acres in size and is located approximately 18.9 miles south of Martha's Vineyard, Massachusetts, 30.5 miles east of Montauk, New York, and 16.7 miles from Block Island, Rhode Island.[8] The SRWF lease area is located south of the South Fork Wind

[1] Lease Area OCS-A 0487 was originally awarded to Deepwater Wind New England, LLC by BOEM on July 31, 2013. Deepwater Wind New England subsequently assigned the lease area to Sunrise Wind, LLC. On September 3, 2020, Bay State Wind, LLC assigned a portion of its lease area, OCS-A 0530, to Sunrise Wind, LLC. On March 15, 2021, BOEM completed the consolidation of OCS-A 0530 into OCS-A 0487. The result is the current Sunrise Wind Lease Area.
[2] *See* Sunrise Wind Farm COP section 1.3 at 1-11 [hereinafter SRWF COP].
[3] *Id.* at 1-10 to 1-11. OREC agreements are equivalent to Power Purchase Agreements used by other states to procure offshore wind energy.
[4] *See* SRWF COP Table 1.2-1 at 1-9.
[5] *Infra* pp. 25.
[6] *See SRWF COP Table 1.2-1 at 1-9*
[7] *See* Jochen Eickholt, *Siemens Gamesa Renewable Energy, S.A. Other Relevant Information*, September 12, 2022, stating Siemens Gamesa will supply 84 SG 11.0-200 DD offshore wind turbines for the SRWF project.
[8] *See* SRWF COP section 1.1 at 1-1.

Farm and the proposed Revolution Wind Farm.[9] 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.[10]

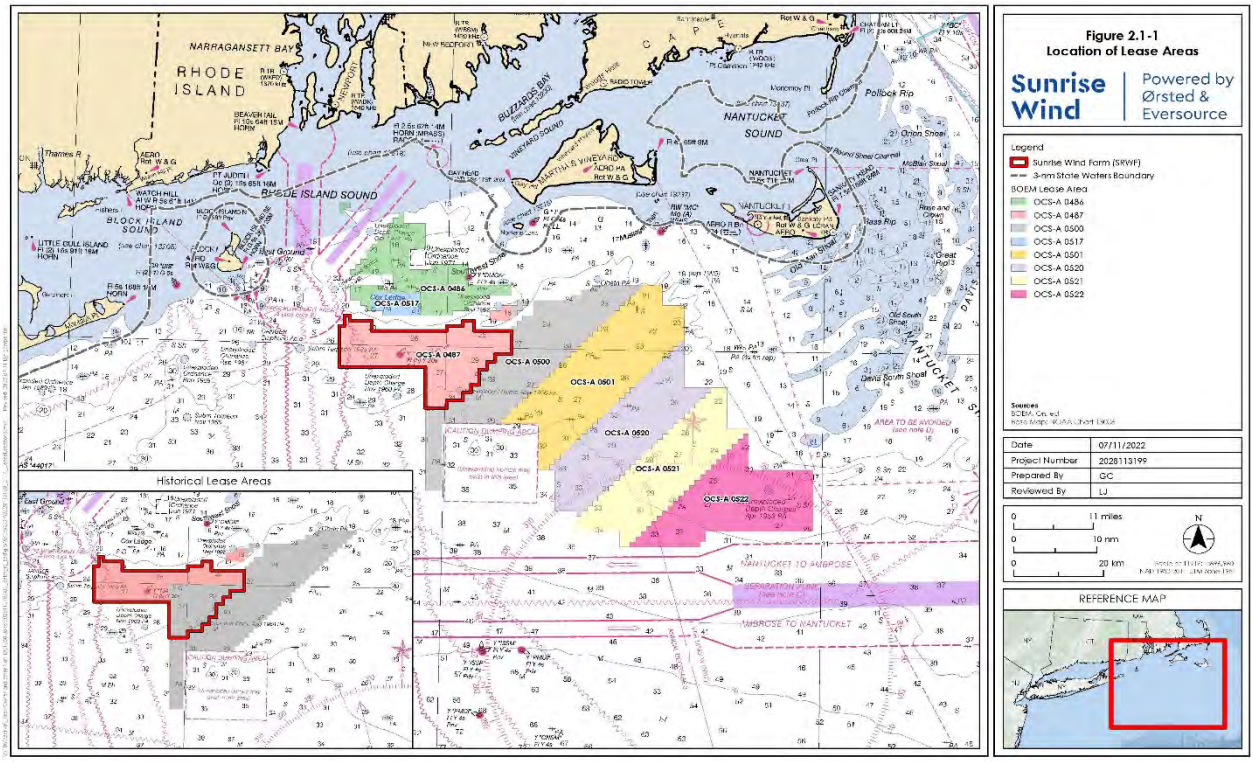

Figure 1: Sunrise Wind Lease Area in relation to other offshore wind lease areas in the region.

[9] *See* Figure 1 and Figure 2.

[10] *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.

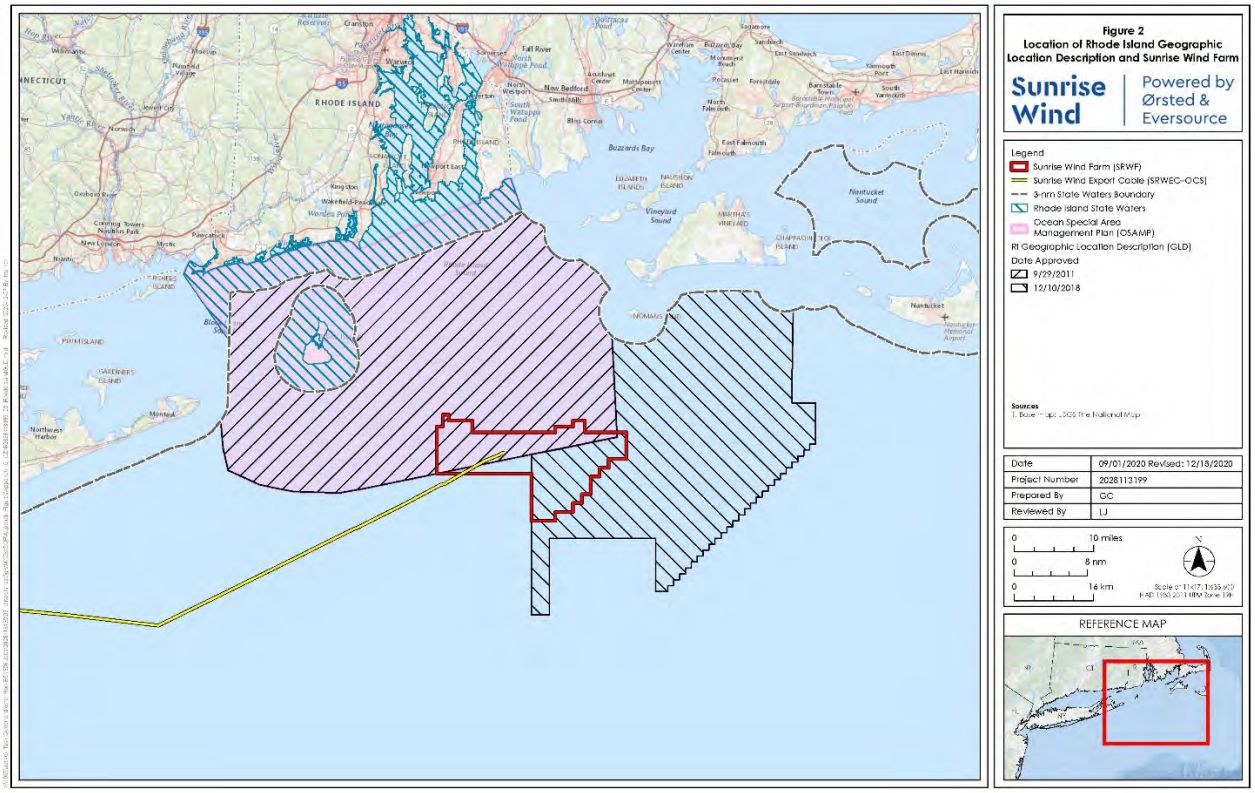

Figure 2: Sunrise Wind Lease Area and export cable corridor overlain with R.I.'s 2011 (pink) and 2018 (black) GLD areas.

2 Federal Consistency

The proposed SRWF 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) Exploration, Development and Production Activities. In this matter, Sunrise 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 SRWF is a listed activity within the Ocean Special Area Management Plan (Ocean SAMP)[11] and is located within Rhode Island's 2011 and 2018 Geographic Location Description (GLD)[12] areas 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

[11] *See* 650-RICR-20-05-11.
[12] *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.

written decision as to whether the proposed SRWF project is consistent with Rhode Island's federally approved enforceable policies[13] 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 Sunrise Wind's consistency certification for the SRWF Project is required before BOEM may approve, disapprove, or approve with conditions the SRWF COP pursuant to 30 C.F.R. § 585.682(f).

The CRMC's six-month federal consistency review period commenced on October 28, 2021,[14] upon Sunrise Wind meeting its necessary data and information requirements with the CRMC pursuant to 15 C.F.R. §§ 930.57-930.58 and 930.76. Subsequently, on January 25, 2022, the CRMC issued its three-month notice[15], as required by 15 C.F.R. § 930.78(a), to Sunrise Wind and BOEM describing the status of the CRMC's ongoing federal consistency review. The three-month letter specified issues Sunrise Wind needed to address in order to be consistent with the CRMC's enforceable policies and requested additional information necessary for 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), offshore converter station, and the export cable corridor; economic exposure and impacts assessments that consider project impacts to Rhode Island-based commercial and recreational fishers harvesting/fishing within the lease area and export cable route; avoidance, minimization, and mitigation measures intended to be taken; graphics depicting infrastructure in relation to glacial moraine and complex bottom habitat; alternative project layouts that make all feasible efforts to avoid damage to glacial moraine resources and values; and a Fisheries Research and Monitoring Plan. Over the course of the review period, 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 Sunrise Wind mutually agreed to **five** (5) separate stay agreements over the course of CRMC's review as follows:

- **1st** stay agreement began on December 15, 2021, with a CRMC decision date of March 2, 2023

[13] *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."
[14] *See* Appendix 2 – CRMC CZMA Review Commencement Letter. SRW filed its consistency certification with CRMC on September 1, 2021, and CRMC subsequently issued its 30-day letter informing SRW what additional information was needed for the CZMA 6-month review to start.
[15] *See* Appendix 3 – CRMC Three-Month CZMA Review Status Letter.

- **2nd** stay agreement began on December 15, 2021, with a CRMC decision date of April 27, 2023.
- **3rd** stay agreement began on March 17, 2023, with a CRMC decision date of May 31, 2023.
- **4th** stay agreement began on May 2, 2023, with a CRMC decision date of July 25, 2023.
- **5th** stay agreement began on May 31, 2023, with a CRMC decision date of September 8, 2023.

Accordingly, the CRMC federal consistency decision is due no later than **September 8, 2023,** pursuant to 15 C.F.R. §§ 930.77 and 930.78. If the CRMC fails to issue a decision by September 8, 2023, a concurrence "shall be conclusively presumed" and no mutually agreed upon conditions will be applicable to the project.[16]

To inform the federal consistency review, CRMC reviewed the SRWF COP, BOEM Draft Environmental Impact Statement (DEIS) announced on December 12, 2022, and developed pursuant to the National Environmental Policy Act and the CZMA, the SRWF federal consistency certification, and additional supplemental information provided by Sunrise Wind throughout 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).[17] In furtherance of CRMC's role as a designated cooperating agency, CRMC will continue to review and comment on future BOEM submissions regarding the SRWF including the Final Environmental Impact Statement.

3 Concurrence with Conditions

Based on the Staff's review, the conditions below would permit the CRMC to issue a concurrence in this matter because the conditions are mutually agreed to and provide assurances that the SRWF 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

[16] 15 C.F.R. § 930.78(b).
[17] *See* Ocean SAMP §§ 11.10.1(D), (G), (H), (J).

federal permit or license]."[18] 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.[19] Sunrise Wind filed a consistency certification with CRMC on September 1, 2021, stating "the proposed activities…comply with the enforceable policies of the Rhode Island approved coastal management program and will be conducted in a manner consistent with such program."[20] The consistency certification includes a response for each Ocean SAMP enforceable policy stating how the SRWF Project is consistent with said policies. Staff determined the consistency certification did not adequately demonstrate how the proposed SRWF Project is consistent with Ocean SAMP enforceable policies. To resolve consistency issues, Staff and the developer engaged in continued review of the consistency certification, provided additional information and information requests, and held weekly detailed consultations. As a result of these efforts, Staff and Sunrise Wind have mutually agreed to the following conditions which, if approved of by the Council, would allow the SRWF Project to be consistent with Ocean SAMP enforceable policies to permit a concurrence.

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

1. The three wind turbines, and their associated inter-array cables, located in the extreme northwest of Lease Area OCS-A 0487 shall not be constructed as part of the Sunrise Wind Farm project or any future offshore wind development.[21]

2. The project, as originally proposed in the Project Design Envelope, included up to 122 potential turbine foundations and one OCS-DC converter station. The number of potential turbine positions has since been reduced. Therefore, Sunrise Wind shall include 87 possible turbine foundation positions, for the installation of 84 turbine foundations to meet the project's 924 MW Offshore Renewable Energy Certificate agreement with the State of New York (final layout to be approved by the Bureau of Ocean Energy

[18] *See* 15 C.F.R §§ 930.4(a); 930.62(d).
[19] *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.
[20] *See* SRWF COP Appendix C section 4; *see also Id.* at Table 3: Rhode Island CRMC Certification listing Sunrise Wind's response to each Ocean SAMP enforceable policy.
[21] *See* Figure 3.

Management as part of the Record of Decision approving Sunrise Wind's Construction and Operation Plan). The project shall include no more than one offshore converter. As such, the project layout will minimize reasonably foreseeable effects to Rhode Island coastal uses including effects to those resources and uses with the same characteristics, values, and resources found in Rhode Island State Waters.

3. Where practicable, turbine foundations, offshore converter station, and the associated inter-array and export cable, will be sited outside of Cox Ledge and will be micro-sited to 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, unless such siting outside of Cox Ledge precludes Sunrise Wind from meeting its power purchase agreement obligations.

4. At all crossings of the out-of-service cable, Sunrise Wind will use a de-trenching grapnel to recover a section of the cable to the ship's deck. A sufficiently long section will be cut out, and the remaining cable ends lowered back to the seabed on either side of the Sunrise Wind Cable Route. Where feasible and to the extent practicable, Sunrise Wind will bury the cut cable ends to their pre-existing depth and not use any secondary cable protection measures.

5. Sunrise Wind, LLC shall conduct the fisheries research and monitoring plan and the benthic habitat research and monitoring plan that receive final approval from the Bureau of Ocean Energy Management as part of the Record of Decision approving Sunrise Wind's Construction and Operations Plan.

6. Sunrise Wind, LLC shall provide the CRMC with quarterly reports on the OCS-DC converter station that shall contain information required to be reported to the Federal Environmental Protection Agency (EPA) regarding station performance and impacts.

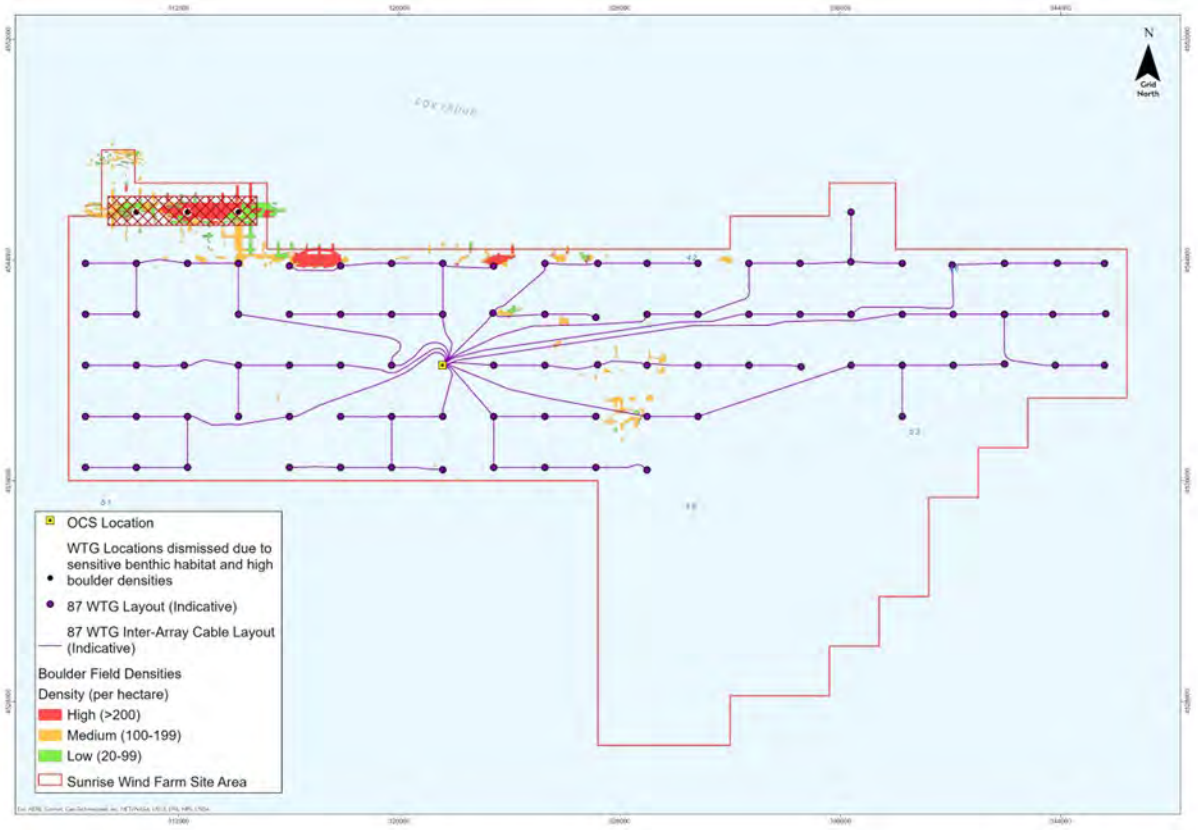

Figure 3: Most recent SRWF layout proposal. Note the three positions in the extreme northwest in red. These positions are referenced in Condition 1.

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."[22] The regulation further states that an enforceable policy "shall contain standards of sufficient specificity to guide public and private uses."[23] The CRMC's enforceable policies for purposes of 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

[22] *See* 15 C.F.R. § 930.11(h).
[23] *Id.*

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.[24]

As required by 15 C.F.R. §§ 930.57 and 930.76(a)(2), Sunrise Wind filed a consistency certification with CRMC on September 1, 2021, stating "the proposed activities…comply with the enforceable policies of the Rhode Island approved coastal management program and will be conducted in a manner consistent with such program."[25] In addition, Sunrise Wind provided responses to each of the Ocean SAMP enforceable policies within Appendix C Table-3. The corresponding Sunrise Wind response and the CRMC analysis are shown below for pertinent Ocean SAMP enforceable policy analysis and discussion as to whether the SRWF Project meets the respective 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.

Sunrise Wind Consistency Certification Response:

With respect to the SRWF lease area, the Developer states:

> The SRWF is consistent with this policy. The SRWF will not have significant adverse impact on the natural resources or human uses of the area. Current activities will be able to continue post construction. (*See* COP Appendix C Table 3)

[24] *See* 15 C.F.R. §§ 930.57(a); 930.76(c).
[25] *Supra* n. 20 pp. 9.

With respect the SRWF export cable corridor, the Developer states:

> The SRWEC–OCS is consistent with this policy to the extent applicable. The SRWEC–OCS will not have significant adverse impact on the natural resources or human uses of the area. Current activities will be able to continue post construction. (*See* COP Appendix C Table 3)

4.1.1 CRMC Analysis:

Enforceable policy § 11.10.1(C) requires Staff to conduct a two-part review. The first part requires the Council to 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 and if not, the Council is obligated to deny the proposal. In the context of a federal consistency review, a denial by the Council would take the form of an objection to the SRWF project or the Council could propose additional conditions not agreed to by the Developer if the Council opines such conditions would further avoid/minimize/mitigate impacts so that the project is consistent with enforceable policies.

4.1.1.1 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 SRWF project is anticipated to provide certain benefits to the Rhode Island marine sector ranging from the use of port facilities to direct economic impacts from project construction and operation/maintenance. Table 3.3.10-1 *Potential Port Facilities* of the SRW COP lists the Port of Providence, Port of Davisville and Quonset Point, and Port of Galilee as potential locations for construction and operation/maintenance facilities. Activities at these ports range from WTG tower and blade storage to foundation component fabrication and electrical activities/support.[26] Economic modeling indicates the SRWF will account for $1,750,000,000 in value added to the United States economy during the presumed 27-month construction phase and contribute approximately $70,000,000 annually

[26] *See* SRWF COP Table 3.3.10-1 at 3-82.

during the operations phase.[27] Rhode Island specific direct economic benefits from the SRWF are expected to be approximately $125,000,000 during the construction and operations phases.[28] In addition, approximately 40 full-time construction jobs will be created in the near term.[29]

Negative impacts are anticipated for Rhode Island-based commercial and recreational fishers from the development of the Project. With regard to the commercial and for-hire recreational fishing sectors, BOEM estimates the overall impact from the SRWF as minor to major with most being moderate.[30] However, BOEM's moderate estimation assumes commercial fishing operations will be able to find "suitable alternative fishing locations" while those that cannot "could experience long-term, major disruptions."[31] Temporary navigational restrictions during construction will preclude fishers from accessing some areas of the SRWF export cable and lease area and/or restrict movement and harvesting activities.[32] This preclusion would likely cause fishers to experience lost revenues and other short-term impacts such as lost time, increased crew costs, fuel, reduced catch, and overall effort. BOEM also anticipates potential "long-term, minor beneficial impacts for some for-hire recreational fishing operations due to artificial reef effect," a point which the FAB disagrees with. If the artificial reef effect occurs, minor beneficial impacts could be offset by an increase in for-hire recreational fishing creating congestion within the lease area and user conflicts that may exclude some fishers from the area.[33] The presence of structures will also alter navigational patterns in the long term. This displacement is anticipated to create additional user conflicts and force some fishers to find alternative fishing locations or exit the fishery permanently. Although leisure recreational fishing is not mentioned in the SRWF DEIS Table *Summary of Impacts on Resources from Proposed Action and Alternatives*, it can be reasonably assumed the sector could experience similar range of impacts as the commercial and for-hire sectors.[34]

[27] *See* SRWF COP Appendix W.
[28] *See* Appendix 6 - Sunrise Wind Economic Benefits Summary.
[29] *Id*.
[30] *See* Sunrise Wind Farm Draft Environmental Impact Statement Table 2.4-1 (Summary and Comparison of Impacts on Resources from Proposed Action and Alternatives) at 2-46 to 2-69 [hereinafter SRWF DEIS].
[31] *Id*.
[32] *Id.* at 3-419 to 3-420.
[33] *See* SRWF DEIS at 3-419 to 3-420.
[34] *Supra* n. 29.

Despite having less complex benthic conditions than previous wind farm projects, many of the same impacts may be realized by Rhode Island fishers during the construction and operation/maintenance phases. The previously reviewed South Fork Wind and Revolution Wind projects are sited on vast expanses of glacial moraine and dense boulder fields. By comparison the SRWF lease area is characterized by sands and muddy sand coastal plain sediments with scattered and isolated boulders, some in fields of varying density.[35] Regardless of having less complex benthic conditions, the presence of offshore wind infrastructure will increase the complexity of the ocean floor, likely making it more difficult for some commercial fishers to operate in the area. For example, the project area contains "a heavy number of trawl marks interpreted as being formed by hydraulic dredge drags to harvest shellfish."[36] Given the apparent fishing intensity and scattered boulders, it is questionable as to whether some fishing practices could continue at their current levels during the operational phase. Furthermore, the SRWF DEIS states the "presence of structures could lead to impacts on commercial fisheries and for-hire recreational fishing through navigation hazards (including transmission cable infrastructure) and allisions (collisions with stationary objects), entanglement or gear loss/damage, fish aggregation, habitat conversion, and space use conflicts."[37]

As was stated in the Staff Recommendation for Revolution Wind, 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 approximately 27 months.[38] Only when that information is available will fishers be able to begin adapting to fishing within a large-scale wind farm. Notwithstanding navigational changes,

[35] *See* SRWF DEIS at 3-80 to 3-81; *see also* SRWF COP at 4-68 to 4-69.
[36] *See* Oakley. 2023. Review of Proposed Turbine Locations, Interarray Cable: Sunrise Wind Farm. Oakley Geologic Consulting. Report prepared for the Rhode Island Coastal Resources Management Council, 4-5; *see also* King. 2023. Review of the Proposed Design of the Sunrise Wind Farm: Turbine and Interarray Cable Locations. J. King Consulting LLC. Report prepared for the Rhode Island Coastal Resources Management Council, 4.
[37] *See* SRWF DEIS at 3-420.
[38] Construction timeframes are approximate and may be shorter or longer depending on final time-of-year restrictions imposed by BOEM through COP approval and the Record of Decision.

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 and economic drivers which make up the shoreside supply chain could 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. As stated by BOEM, commercial fishing fleets "not only generate direct employment and income for vessel owners and crew, but contribute indirectly to the employment and revenue generated through producers and services necessary to maintain and operate fishing vessels, seafood processors, wholesalers/distributors, and retailers."[39] 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.

The addition of structures in the water and the potential for any vessel to enter the area in inclement weather adds an additional risk of human mortality that currently does not exist. The potential also 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 information regarding how fishers operate within wind farms. Furthermore, an independent National Academy of Sciences report funded by BOEM and the offshore wind industry indicates radar navigation risks but specifically fails to consider impacts to radar while working (i.e., commercial fishing) within an offshore wind array.[40] One could reasonably find there may be a net loss to existing Rhode Island based marine businesses due to the inability to operate safely during inclement weather.

[39] *See* SRWF DEIS at 3-380.
[40] *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.

Based on discussions between Staff, the FAB, and Sunrise Wind, the fisheries economic exposure value for Rhode Island attributable to the SRWF lease area and export cable corridor over the 30-year project lifetime is estimated to be between $8,187,000 in 2023$ (WHOI[41] estimate; 5% discount rate) and $190,845,969 in 2023$ (FAB estimate; 3% discount rate). The FAB's estimate is for the life of the project and includes $58,983,193 in commercial and for-hire/charter recreational fishing landings inclusive of a $300,000 Coastal Community Fund. The FAB estimate also includes $2,712,804 for leisure recreational fishing and $129,149,972 for a Navigational Safety and Training Fund.[42] The WHOI report is located in Appendix 5.[43] The Developer's initial offer to the fishing industry totals $12,963,833 and includes $12,280,500 in direct compensation for commercial and for-hire/charter recreational fishing (a 50 percent increase from the WHOI exposure estimate), $300,000 Coastal Community Fund, $50,000 earmarked to "fund a study to evaluate [the] level and type of recreational fishing in the SRWF lease area up to 5 years," and a $333,333 Navigational Safety and Training Fund.[44]

Regardless of the parties' gap in direct compensation and recreational fishing compensation, there are considerable differences in the Navigational Safety and Training Fund. The FAB's Navigational Safety and Training Fund is proposed to "make funds available for commercial fishermen to add a ½ [Fulltime Equivalent qualified vessel operator] for 146 boats, to their crew, in order to navigate in, through and around [the SRWF]."[45] The Developer's proposed fund of the same name proposes to "make funds available on a voucher basis for equipment updates and training as agreed under the [South Fork Wind and Revolution Wind]" projects.[46] These updates are mainly for new radar systems. Therefore, given the uncertainties surrounding the economic exposure estimate, CRMC Staff cannot determine whether there will be an overall net benefit to the Rhode Island marine economic sector from the SRWF Project or if there will be an overall net loss.

[41] The Woods Hole Oceanographic Institution (WHOI) has been hired by Sunrise Wind to conduct fishery economic exposure analysis on economic impacts to Rhode Island commercial and for-hire fishers. The FAB Subject Matter Experts and WHOI came to an agreement on the baseline valuation for Rhode Island commercial/for-hire recreational fisheries.
[42] *See* Appendix 10 – CRMC FAB Counteroffer (August 16, 2023).
[43] *See* Appendix 5 – WHOI Rhode Island Fisheries Exposure from the Sunrise Wind Lease Area and the Sunrise Export Cable Route.
[44] *See* Appendix 9.
[45] *See* Appendix 10.
[46] *See* Appendix 9.

4.1.1.2 Notwithstanding unknown impacts, Sunrise Wind has adequately modified the project to avoid, minimize, and/or mitigate reasonably foreseeable impacts.

The second part the enforceable policy requires that "the applicant modify the proposal to avoid and/or mitigate the impacts or the Council shall deny the proposal." As previously stated, in the context of a federal consistency review, a denial by the Council would take the form of an objection to the project or the Council could propose additional conditions not agreed to by the Developer if the Council opines such conditions would further avoid/minimize/mitigate impacts so that the project is consistent with 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 the Sunrise Wind Project* on December 12, 2022, which includes a comparison of incremental and overall cumulative impacts across three project alternatives including a no action alternative, a full project buildout as described in the COP, and a fisheries habitat minimization alternative which includes two sub alternatives.[47] 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 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; and
- Changes in risk of gear entanglement or target species.

As noted above, BOEM anticipates disruptions to port 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 SRWF will consist of 87 potential foundation positions (84 WTGs, 1 OSSs).[48] BOEM states "the presence [SRWF's infrastructure] could result in…an exclusion area for fishing if fishing vessel operators are not –

[47] *See* SRWF DEIS at 2-3 to 2-4.
[48] *See* Appendix 8.

or perceive that they are not – able to safely navigate in the area around WTGs."[49] 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 mile (NM) uniform grid wind turbine layout as compared to current operations. Loss of gear sets may 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 discussed under enforceable policy § 11.10.1(H), the SRWF is not located directly on Cox Ledge or glacial moraine habitat. However, the project area is characterized by unconsolidated boulders and NOAA NMFS has identified several areas of Atlantic cod spawning habitat. These areas are reflected in the DEIS Alternative C. These habitat areas play a critical role in Atlantic cod and other fishery resource development. A recent study looked at Atlantic cod spawning behavior in southern New England and assessed potential interactions with offshore wind energy.[50] 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.[51] "This aggregation behavior includes courtship rituals in which males produce repetitive grunt-like sounds to attract a mate."[52] 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,"

[49] *See* SRWF DEIS at 3-423. The US Coast Guard dictates safety and exclusion zones around structures in the open ocean. The US Coast Guard does not plan to create exclusionary zones around offshore wind facilities except for safety zones during construction and decommissioning phases.
[50] Van Hoeck, Rebecca V., Rowell, Timohty 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.
[51] Van Hoeck, et al., 2023 at 2-3.
[52] *Id*.

particularly pile driving activities.[53] 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' (RFMC) 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.[54] Impacts from offshore wind development on the ability of NMFS or a RFMC 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."[55] A reduction in quotas would likely displace fishers from the SRWF lease area increasing fishing pressure on fishery resources outside of the lease area. Increased fishing pressure may result in 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 a need for a reduction in the overall commercial fishing fleet to allow some commercial fishing businesses to remain solvent. Additionally, 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 historic fishing practices observed under the so-called "gentlemen's agreement" will likely be disrupted by the introduction of the SRWF's 84 WTGs, one OCS-DC converter station, and the associated cables. The gentlemen's 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 various gear types to operate cooperatively and minimize user conflicts. The addition of wind

[53] *Id*.
[54] 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.
[55] Hogan et al., 2023 at 192-93.

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.[56] Additionally, adverse weather conditions may require vessels to transit around the SRWF altogether. 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 SRWF 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.[57]

The CRMC expects significant disruption to existing Rhode Island based coastal uses and resources during the construction and decommissioning phases of the SRWF project. The proposed 84 foundations are expected to be installed at a rate of three per day[58] 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 WTG foundations and the OCS-DC converter station foundation is anticipated to occur continuously over the course of 4-5 months.[59] "At a maximum, the Project expects up to two vessels working simultaneously"[60] to install foundations and up to two bubble curtain vessels to provide in-water noise mitigation.[61] 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 benthic species will occur through limited boulder removal in and around foundation installation sites and IAC routes. Boulder removal will include clearing all

[56] "Allision" refers to an accident between a vessel and a stationary object. A "collision" refers to two vessels running into one another.
[57] *But see infra* pp. 27 discussing non-orthogonal offshore wind array layouts in comparison to the 1x1 NM grid.
[58] *See* SRWF COP at 3-63.
[59] *Id.* at 3-6.
[60] *Id*.
[61] *Id.* at Table 3.3.10-3 at 3-87.

areas where foundations and jack-up vessels will be located using a boulder pick tool. Similarly, a boulder pick tool will be used for the IAC network and the export cable network. A boulder plow is not expected to be needed given the low number of boulders in the SRWF lease area overall.

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* (emphasis added) 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 feet below the mudline."[62] BOEM also provides two alternatives to decommissioning: (1) facilities remain in place, or (2) facilities are converted to an artificial reef.[63]

Decommissioning as proposed in the SRWF 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.[64] For example, studies at the BIWF documented an increase in the abundance of black sea bass, scup, bluefish, monkfish, winter flounder, and dogfish. The SRWF 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. 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 of decommissioning, Sunrise Wind "will develop a final decommissioning and removal plan for the

[62] 30 C.F.R. §§ 585.433; 585.910.
[63] *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.
[64] *See* SRWF DEIS at 3-429 stating habitat would be reduced for species which prefer soft-bottom habitat like surfclams, sea scallops, squid, and summer flounder but population level impacts are not expected.

facility that complies with all relevant permitting requirements" and will account for any changes which have occurred during the life of the project.[65]

During the operational phase, SRWF infrastructure will cause alterations to existing Rhode Island based fishing activities. As discussed in CRMC's federal consistency decisions for the Vineyard Wind 1, South Fork Wind, and Revolution Wind 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*.[66] The spacing may allow for some commercial fishing, although substantial modifications to fishing gear and operations would likely be necessary. As previously discussed, BOEM anticipates there could be minor to major impacts to commercial fisheries and for-hire recreational operations as result of the SRWF project.[67] Moreover, BOEM expects the SRWF along with other ongoing and planned activities (i.e., regional offshore wind development) and environmental changes to have long-term **major** impacts on commercial fisheries and for-hire recreational fishing.[68] 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)

The recreational fishing effort in the SRWF lease area and export cable corridor were not fully accounted for in the SRWF COP. Automatic Identification System (AIS) data is used to determine the number of vessels in a particular area.[69] However, AIS is not required for all pleasure and sailing vessels. Researchers and the FAB indicate the number of vessels utilizing

[65] *See* SRWF COP at 3-100 to 3-101.
[66] *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
[67] *Supra* n. 30 pp. 14.
[68] *See* SRWF DEIS at 2-57 to 2-58.
[69] "AIS" is an automated tracking system that displays other vessels in the vicinity. The broadcast transponder system operates in the VHF mobile maritime band. https://www.marineinsight.com/marine-navigation/automatic-identification-system-ais-integrating-and-identifying-marine-communication-channels/

AIS is largely unknown and likely very low. The FAB has further indicated that most leisure recreational fishing vessels in southern New England are not required to be equipped with AIS. Therefore, the number of leisure recreational fishing vessels, and recreational fishing effort, is likely much greater than what is depicted using AIS data alone.

The Rhode Island for-hire and leisure recreational fisheries have a significant impact on shoreside business. 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 SRWF is located entirely in federal waters, the Project is in a region frequented by Rhode Island fishers and recreational anglers from outside Rhode Island. According to the Developer, economic exposure for Rhode Island based for-hire recreational fishing over the life of the Project is estimated at $718,000 (WHOI estimate in 2020 dollars) or approximately $850,817 in 2023 dollars.[70] The FAB for-hire/charter estimate is included in its "commercial/charter" fishing exposure value of $58,983,193 while the FAB also estimates exposure to leisure recreational fishing at $2,712,804.[71] The WHOI estimations do not account for leisure recreational fishing. Accordingly, negative 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.

Studies suggest highly migratory species (HMS) targeted by recreational fishers such as tunas, sharks, and other pelagic species, may be negatively affected by offshore wind development generally. These studies found impacts on the distribution, abundance, and behavior of HMS[72] including noise as a possible deterrent that could outweigh any benefits of artificial reef effect.[73] Changes in HMS behavior may lead to decreased fishing effort and angler safety as hooked fish become distressed in and around turbine foundations likely forcing anglers

[70] *See supra* pp. 17. The WHOI estimate of $7118,000 for for-hire recreational fishing includes multipliers to account for underreported fishing effort and landings. The WHOI estimate does not account for leisure recreational fishing.
[71] *See* Appendix 10.
[72] *See* Pérez-Arjona, Isabel, et al. "Effects of offshore wind farms operational noise on Bluefin tuna behaviour." Underwater Acoustics 2014. Centro Oceanográfico de Murcia, 2014; s*ee also* Hogan et al. 2023. NOAA Fisheries NMFS-NE-291.
[73] *See* Karama, K.S., Matsushita, Y., Inoue, M., Kojima, K., Tone, K., Nakamura, I. and Kawabe, R., 2021. Movement pattern of red seabream Pagrus major and yellowtail Seriola quinqueradiata around Offshore Wind Turbine and the neighboring habitats in the waters near Goto Islands, Japan. Aquaculture and Fisheries, 6(3), pp.300-308.

to navigate close to the structures. If behavioral changes do occur, it will likely become more difficult for anglers to locate HMS and fishing within a wind array may be perceived as unsafe causing fishers to exit the fishery altogether.

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 facilitate 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 development pathway began with demonstration projects such as the BIWF, Coastal Virginia Offshore Wind, and the floating wind turbine project in Maine. The Vineyard Wind 1 and South Fork Wind projects currently under construction were the next step in scaling development to a small utility scale based on lessons learned. Lessons learned include both scientific and stakeholder relations. This process allows proactive planning based on scientific best practices. Although the SRWF will not be located directly on Cox Ledge, an area known for its biological diversity and value to the fishing industry, the project's location still poses a risk to Rhode Island coastal uses and resources.

4.1.1.3 Developer Mitigation Measures

The SRWF Project has made substantial modifications over the course of CRMC's federal consistency review. The most significant modification is the elimination of 39 turbine positions. Other modifications and mitigation efforts include but are not limited to the micro-siting of infrastructure, efforts to avoid/remove portions of an existing out-of-service cable, modified boulder removal along the export cable corridor and within the lease area, elimination of the need to conduct sand wave dredging, continuing and improving the gear claims process, and improving and executing the fisheries communication plan.

The reduction in the number of foundation positions from 122 to 84 built positions will mitigate impacts to coastal resources and uses in the lease area and export cable corridor by

avoiding unnecessary direct and indirect impacts.[74] The original PDE proposed a full buildout that included 122 built WTG foundation positions and one OCS-DC converter station.[75] Several of these positions were either sited in or in close proximity to complex bottom habitat (i.e., glacial moraine) which dominate the Cox Ledge area approximately 3.1 to 6.2 miles north of the SRWF lease area. As the Project has been refined, the number of foundation positions has been reduced to a maximum of 84 built positions. The Developer intends to have 87 possible positions in which to install foundations. Positions were eliminated because the Developer has selected an 11 MW Siemens Gamesa turbine allowing for efficiencies in project design, only 84 positions are necessary to meet the 924 MW New York OREC obligation, and certain site conditions prevent installation at a number of locations.[76] Site condition challenges include but are not limited to glauconite sands which preclude foundation installation, unexploded ordinances (UXOs), boulders and sensitive habitats, and two existing telecommunications cables in the western portion of the lease area. Additional positions may be eliminated through the federal NEPA process. Overall, the SRWF Project has eliminated 39 foundation positions resulting in a significant reduction in the Project's footprint.

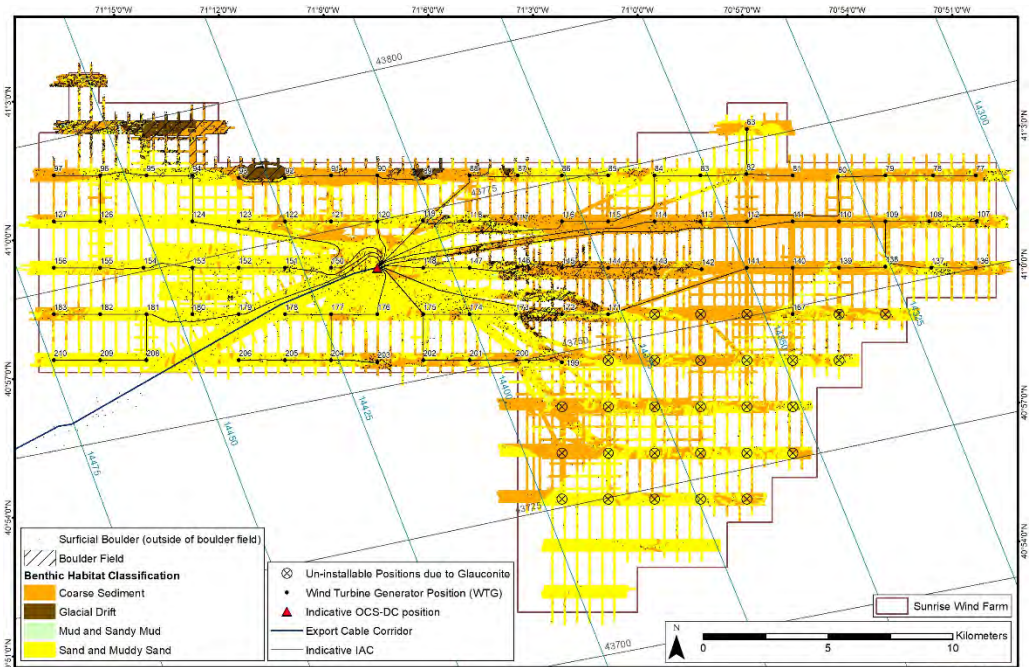

Figure 4: SRWF layout indicating sporadic boulders limited complex bottom structures.

[74] *See* Figure 4.
[75] *See* SRWF DEIS footnote 19 at 3-453 stating an early COP version included a PDE contemplating 122 WTGs with one converter station or 120 WTGs with three converter stations; *see also* SRWF COP footnote 9 at 1-11.
[76] *Supra* pp. 4.

The locations where turbine positions have been eliminated correspond with Priority Areas NOAA NMFS has recommended for avoidance under DEIS Alternative C. Alternative C consists of Fisheries Habitat Impact Minimization Alternatives that are "proposed with the intent to minimize impacts to fisheries habitats in the proposed Project Area that are the most vulnerable to long-term impacts."[77] The Alternatives consider four Priority Areas of "contiguous areas of complex bottom habitat to be excluded from development to potentially avoid and/or minimize impacts to complex fisheries habitats."[78] NMFS identified the Priority Areas shown below in Figure 5 based on Atlantic cod spawning activity in the Project Area.[79] Of the 39 eliminated positions, 13 have been eliminated from Priority Areas 2 and 3, another 21 positions southeast of Priority Area 3 will not be built[80], and, as a condition for concurrence, the Developer ensures that three positions in the extreme northwest above Priority Area 1 will not be built as part of the SRWF Project or any other future offshore wind development.[81] These later positions are located directly in high density boulder fields and glacial moraine which are critical fisheries habitats.

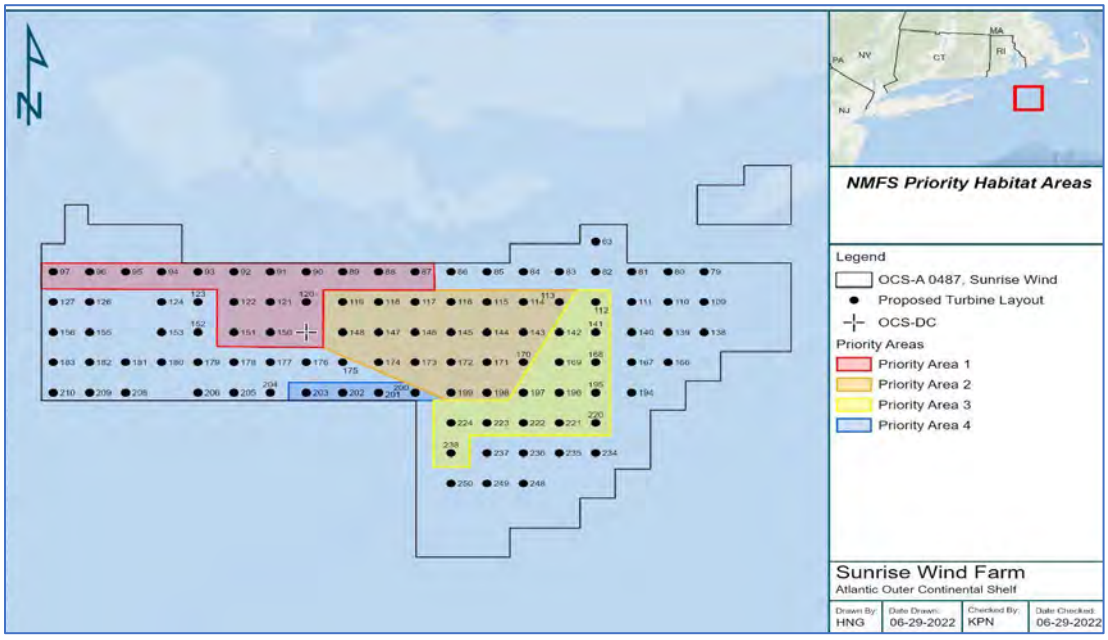

Figure 5: Sunrise Wind DEIS depicting the NMFS Priority Areas as part of Alternative C.

[77] SRWF DEIS at 2-33.
[78] *Id.*
[79] *Id.* at 2.33 to 2-34.
[80] Figure 5 depicts the SRWF as having 102 positions including one OCS-DC converter station as opposed to the original 122 position PDE. Not all positions that have been eliminated are shown.
[81] *See supra* pp. 9; *see also supra* Figure 3 at 11.

Project layout and design will likely further assist in mitigating effects to Rhode Island coastal resources and uses. The SRWF will maintain a 1x1 NM uniform grid turbine layout which is intended to allow for continued historical uses such as fishing and navigation. However, 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 the alternatives analyzed in the DEIS which may avoid placing some turbines in sensitive habitat areas, navigation channels, and visual cultural resource areas. The 1x1 NM layout is preferred by CRMC staff from an environmental impacts perspective over a "non-orthogonal array layout" which is common in Europe.[82] A non-orthogonal array is built for efficiency to maximize energy production. These efficiencies "significantly decrease the cost of energy production" but turbines could be spaced closer together precluding ocean users from accessing the area and potentially amplifying negative impacts on marine life/habitat.[83] 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.

Micro-siting efforts will minimize and/or mitigate effects to marine life and habitats. Based on Staff's discussions with the Developer, turbine foundations, the offshore converter station, and the associated inter-array and export cable, will be sited outside of areas consisting of glacial moraine. These areas are located along the northern edge of the Lease Area and the Developer has demonstrated the ability and desire to avoid directly impacting areas of complex habitat. There is also flexibility to further micro-site foundations within a 500-foot radius of their intended position.[84] Because boulders occur sporadically throughout the project area, it is anticipated that very few boulders will be moved, and inter-array/export cables will be micro-sited around boulders. If a boulder needs to be relocated, a boulder grab will be used. A boulder plow will not be used for any portion of the project further reducing negative impacts during the construction phase.

The Developer has taken appropriate steps to avoid and minimize impacts resulting from two existing transatlantic subsea cables in the western portion of the lease area. One cable was

[82] *See* SRWF COP at 2-31.
[83] *Id*.
[84] *Id*.

installed in 1976 and has been out-of-service since 1994 while the other cable was installed in 2008 and is currently in-service.[85] The out-of-service cable is expected to be buried in some places between 0.1 meters and 3 meters deep but was previously observed on the surface during the South Fork Wind boulder clearance campaign. The out-of-service cable owner told the Developer that the last fishing gear incident was in the 1970s or 1980s. If left as is, this cable would result in four additional cable crossings each requiring secondary cable protection which could deter fishers from fishing the area. However, as noted in Condition 4, a de-trenching grapnel will be used to recover a section of this cable and a section will be cut and removed from the ocean. The remaining ends will be lowered back to the seabed on either side of the SRW cable route and will be reburied. This process will be repeated at each of the four crossings and no additional cable protection is anticipated. Staff find this to be the preferred method as it removes existing 'dead infrastructure' from the ocean and reduces the need for cable protection by allowing the SRW inter-array cable to be buried at a target depth between 4-6 feet.

The in-service cable will not be removed and will require additional cable protection. As previously stated, this cable has been active since 2008. South Fork Wind identified the cable as being buried at approximately 0.3 meters and will cross the SRW inter-array and export cables at four locations. Each location will require secondary cable protection, however final crossing design may include either rock berms or concrete mattresses and will be determined by BOEM.

CRMC is unsure of the level of active fishing around these cables, and it is possible that fishers may generally avoid the area out of caution. If there is active fishing in the area, then based on the information provided, fishers have been active in the region without incident from these cable for an extended period of time. If true, this gives additional confidence that the SRWF's target cable burial depth of 4-6 feet is an appropriate depth range.

The Developer does not anticipate a need to remove a large number of boulders but has committed to modified boulder relocation operations where practicable similar to what was done for the Revolution Wind Project. The SRWF lease area is distinctly different than the Revolution Wind lease area regarding boulder density. Based on information provided by the Developer, of the 87 potential turbine positions, 17 do not have boulders. Of the remaining 70 positions, a vast

[85] *See* Appendix 7.

majority have fewer than 10 boulders within the area associated with the turbine foundation. Furthermore, SRW estimates there are fewer than 15 boulders that may need relocated along the 99.4-mile export cable corridor. As previously stated, SRW acknowledges it is in their best interest to avoid complex bottom habitats, including boulders, from both an environmental and engineering perspective. For example, a turbine foundation has been micro-sited 328ft south to reduce impacts to complex habitats and avoid unnecessary boulder relocation. This micro-siting effort helps to keep bottom habitats in the area cohesive. Additionally, despite it being unlikely that sporadic boulders can be relocated together, SRW has committed to co-locating boulders where practicable to avoid creating numerous new hangs in an effort to reduce risks to fishers and their fishing gear.

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 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 their gear is built and modified to fit individual needs. The gear loss claims program can be found on the Ørsted website here: https://us.orsted.com/renewable-energy-solutions/offshore-wind/mariners

Sunrise 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 has determined that the above modifications

and mitigation measures allow the proposed SRWF Project to be consistent with enforceable policy § 11.10.1(C).

4.2 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.

Sunrise Wind Consistency Certification Response:

With respect to the SRWF lease area, the Developer states:

> The SRWF is consistent with this policy. There are no expected significant long-term negative impacts to Rhode Island's commercial or recreational fisheries from the SRWF. (*See* COP Appendix C Table 3)

With respect to the SRWF export cable corridor, the Developer states:

> The SRWEC–OCS is consistent with this policy to the extent applicable. There are no expected significant long-term negative impacts to Rhode Island's commercial or recreational fisheries from the SRWEC–OCS. (*See* COP Appendix C Table 3)

4.2.1 CRMC Analysis:

Offshore foundation installation for turbines and the converter station is anticipated to take approximately 4-5 months.[86] IAC installation is expected to take 7 months total (3 months for route clearance and 4 months for installation and termination); export cable installation is expected to take up to 8 months (3 months for route clearance and 5 months for installation).[87] The WTG installation on the foundations will take approximately 10 months and the OCS-DC converter station will take approximately 12 months. [88] Although these are tentative timeframes and many of these activities will occur simultaneously, it is likely that impacts from construction activity would persist beyond one-year and affect more than one or two seasons.

[86] *See* SRWF COP at 3-6.
[87] *Id*.
[88] *Id*.

The general construction sequence begins with seabed preparation, then moves to installation of monopile foundations, followed by the installation of approximately 180 miles of IAC and any necessary cable protection. Considering the NOAA NMFS consultations have not been completed and BOEM's ROD conditions are not yet known, there could be additional delays due to time of year restrictions, adverse weather conditions, or other factors. Thus, there is potential for construction duration estimates to exceed the SRWF COP timeframes. For example, current time-of-year restrictions for construction could range from January to April to account for North Atlantic Right Whale activity. Additionally, from CRMC Staff's experiences with the Block Island Wind Farm, there were numerous construction delays that significantly extended the anticipated construction schedule. Given this information, it is possible that 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 policy § 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 coastal resources and uses that occur within the SRWF lease area. Therefore, we must consider SRW's mitigation measures in light of the proposed project timelines.

4.3 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.

Sunrise Wind Consistency Certification Response:

With respect to the SRWF lease area, the Developer states:

> The SRWF is consistent with this policy. Sunrise Wind has evaluated and considered potential adverse impacts from the SRWF and made substantial modifications to the SRWF to mitigate any potential adverse impacts. To the extent any reasonably foreseeable potential impacts remain after consideration of the project modifications, Sunrise Wind will engage in mitigation negotiations pursuant to the Ocean SAMP

enforceable policies. Environmental protection measures will be adopted to mitigate any potential impacts from the SRWF. (*See* COP Appendix C Table 3)

With respect to the SRWF export cable corridor, the Developer states:

> The SRWEC–OCS is consistent with this policy to the extent applicable. Sunrise Wind has evaluated and considered potential adverse impacts from the SRWEC-OCS and made substantial modifications to the SREC-OCS to mitigate any potential adverse impacts. To the extent any reasonably foreseeable potential impacts remain after consideration of the project modifications, Sunrise Wind will engage in mitigation negotiations pursuant to the Ocean SAMP enforceable policies. Environmental protection measures will be adopted to mitigate any potential impacts from the SRWEC–OCS. (*See* COP Appendix C Table 3)

4.3.1 CRMC Analysis:

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

4.4 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.

Sunrise Wind Consistency Certification Response:

With respect to the SRWF lease area, the Developer states:

> The SRWF is consistent with this policy. Sunrise Wind has evaluated and considered potential adverse impacts from the SRWF and made substantial modifications to the SRWF to mitigate any potential adverse impacts. To the extent any reasonably foreseeable potential impacts remain after consideration of the project modifications, Sunrise Wind will engage in mitigation negotiations pursuant to the Ocean SAMP enforceable policies. Environmental protection measures will be adopted to mitigate any potential impacts from the SRWF. The Project's Fisheries Communication and Outreach Plan summarizes the outreach conducted and includes a Fishing Gear Conflict Prevention and Claim Procedure that identifies measures to prevent gear loss, as well as a claim procedure in the event that gear loss is caused by SRWF survey activities and the SRWF will not diminish the effectiveness of fisheries management programs. (*See* COP Appendix C Table 3)

With respect to the SRWF export cable corridor, the Developer states:

> The SRWEC–OCS is consistent with this policy. Sunrise Wind has evaluated and considered potential adverse impacts from the SRWEC-OCS and made substantial modifications to the SREC-OCS to mitigate any potential adverse impacts. To the extent any reasonably foreseeable potential impacts remain after consideration of the project modifications, Sunrise Wind will engage in mitigation negotiations pursuant to the Ocean SAMP enforceable policies. Environmental protection measures will be adopted to mitigate any potential impacts from the SRWEC–OCS. The SREC-OCS will not diminish the effectiveness of fisheries management programs. (*See* COP Appendix C Table 3)

4.4.1 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.[89] 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 impacts from artificial reef effect. Additionally, the Project DEIS states BOEM estimates the overall impact from the SRWF as minor to major, with most being moderate, for commercial and recreational fishers.[90] Thus, the Developer's consistency certification statement that the SRWF and export cable "will not diminish the effectiveness of fisheries management programs" may not be accurate.

The developer has made modifications to the Project that avoid, minimize, and/or mitigate impacts 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 presented under enforceable policy § 11.10.1(C), the SRWF Project has been reduced from 122 to 87 possible positions, 84 of which will be built out. Sunrise Wind states viable foundation positions have been micro-sited outside of moraine edges which reduces, but does not necessarily eliminate, impacts to glacial moraine. IACs are expected to be micro-sited around the region's sporadic boulders and any boulder relocation will be limited to a boulder grab, not a plow. Additionally, relocated boulders will be placed with existing boulders where practicable to reduce the creation of new hangs. 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 amount to a one-to-one replacement of

[89] *See* Hogan et al., 2023 at 55.
[90] *See* SRWF DEIS Table 2.4-1 (Summary and Comparison of Impacts on Resources from Proposed Action and Alternatives) at 2-46 to 2-69.

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, Sunrise Wind, and the FAB. All sides agree project modifications are necessary to reach a consensus on what may constitute adequate mitigation measures. Soon after the CRMC issued its consistency decision for the Revolution Wind Project on May 12, 2023, CRMC Staff, Sunrise Wind, and the FAB began holding weekly meetings to discuss various mitigation measures including compensatory mitigation and project modifications. Additionally, the FAB and Sunrise Wind held ad hoc meetings throughout each subsequent week to further discuss and present mitigation measures. The FAB continues to stand by their assertion that the Project does not meet any of the CRMC's Ocean SAMP enforceable policies.

A key part of these meetings were discussions analyzing the Woods Hole Oceanographic Institution's (WHOI) "*Rhode Island Fisheries Exposure from the Sunrise Wind Lease Area and the Sunrise Export Cable Route*."[91] This report was prepared by WHOI under contract with Sunrise Wind and considers the potential effects of the construction, operations, and decommissioning Project phases on commercial and recreational (for-hire charter) fishing industries in Rhode Island. Although there has been substantial agreement on the baseline valuation for Rhode Island commercial and recreational for-hire fisheries, there continues to be considerable disagreement regarding the economic exposure valuation.[92] In addition to discussing the compensatory mitigation component, Staff and Sunrise Wind provided information on the Project to the FAB for their review and input. The FAB's input included a range of proposed conditions some of which were refined into the six mutually agreed to conditions while others were either not agreed to by the Developer or were outside the scope of CZMA federal consistency review. Despite the FAB position that there has not been enough mitigation, the dialogue between the parties has been crucial to the effort to meet enforceable policy § 11.10.1(G). Despite significant efforts by Staff over the course of federal consistency

[91] *See* Appendix 5.
[92] *See* infra pp. 17.

review, the three parties (CRMC, FAB, and Developer) have been 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 SRWF 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(G) solely based on the developer's proposed mitigation measures as they amount to a "process to make whole those fisheries user groups…that are adversely affected by offshore development." Staff are also of the opinion that the Project would be consistent with the enforceable policy if a compensatory mitigation agreement were agreed to.

4.5 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.

Sunrise Wind Consistency Certification Response:

With respect to the SRWF lease area, the Developer states:

> The SRWF is consistent with this policy. The SRWF will be sited to avoid Areas of Particular Concern, or will take all feasible efforts to avoid damage to the Areas of Particular Concern resources and values and there will be no significant alteration of the Areas of Particular Concern resources and values. (*See* COP Appendix C Table 3)

With respect to the SRWF export cable corridor, the Developer states:

> The SRWEC–OCS is consistent with this policy to the extent applicable. The SRWEC–OCS will be sited to avoid Areas of Particular Concern, or will take all feasible efforts to avoid damage to the Areas of Particular Concern resources and values and there will be no significant alteration of the Areas of Particular Concern resources and values. (*See* COP Appendix C Table 3)

4.5.1 CRMC Analysis:

The SRWF Project was originally sited to avoid glacial moraine. The SRWF lease area is located south of the South Fork Wind and Revolution Wind lease areas which are both located directly on Cox Ledge. Cox Ledge is dominated by dense boulder fields and complex glacial moraine bottom habitat. Previously, the FAB has indicated their preference that no offshore wind projects be developed due to the ecological and economic significance of Cox Ledge. The SRWF does not contain the same levels of complex bottom habitat as the northern lease areas and is largely characterized by sporadic, unconsolidated boulders. Furthermore, bottom conditions are much more conducive to achieving the 4 to 6 ft cable burial depth in the SRW Project Area. This is not to suggest the lease area is devoid of important fisheries habitat and other resources.

As noted herein, glacial moraine and other complex habitats located within CRMC's Geographic Location Description areas 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 were necessary for those turbine and IAC locations that potentially contain these resources. Under Condition 1, SRW has guaranteed that three positions in the extreme northwest of the lease area which contain glacial moraine and dense boulders fields will not be built as part of this or any future offshore wind development. Condition 2 limits the Developer to building a maximum of 84 WTGs and one OCS-DC converter station thus reducing the number of positions. Condition 3 explicitly requires the Developer to make all practicable efforts to site project infrastructure outside of the Cox Ledge area. Condition 4 stipulates the existing out-of-service cable be removed in-part and reburied in-part and that no additional secondary cable protection will be used. These conditions, along with other mitigation measures, will reduce impacts from the SRWF and allow the project to be consistent with enforceable policy § 11.10.1(H).

4.6 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.

Sunrise Wind Consistency Certification Response:

With respect to the SRWF lease area, the Developer states:

> The SRWF is consistent with this policy to the extent applicable. Sunrise Wind is performing surveys to determine any impact on essential habitats and those species within the wind farm area and will be part of a fisheries monitoring plan. The SRWF is not expected to have negative effects on commercially and recreationally fished species and habitats. (*See* COP Appendix C Table 3)

With respect to the SRWF export cable corridor, the Developer states:

> The SRWEC–OCS is consistent with this policy to the extent applicable. Sunrise Wind is performing surveys to determine any impact on essential habitats and those species within the wind farm area and will be part of a fisheries monitoring plan. The SRWEC–OCS is not expected to have negative effects on commercially and recreationally fished species and habitats. (*See* COP Appendix C Table 3)

4.6.1 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 N1 – Essential Fish Habitat Assessment Table 2.2.3-1. 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.[93]

[93] *See* SRWF COP Appendix N1 at 10 to 12.

Habitat Areas of Particular Concern (HAPC) are also identified with EFH areas.[94] The Appendix further states that impact producing factors "may result in direct or indirect impacts to EFH" and "will vary by life stage, with some species/life stages being more vulnerable than others."[95] Project impacts to EFH include potentially significant impacts to Atlantic cod and cod habitat, benthic habitat conversion and community structure alteration, and sedimentation effects.

Based in-part on anticipated impacts to 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, SRW has guaranteed that three positions in the extreme northwest of the lease area which contain glacial moraine and dense boulders fields will not be built as part of this or any future offshore wind development. Condition 2 limits the Developer to building a maximum of 84 WTGs and one OCS-DC converter station thus reducing the number of positions. Condition 3 explicitly requires the Developer to make all practicable efforts to site project infrastructure outside of the Cox Ledge area. Condition 4 stipulates the existing out-of-service cable be removed in-part and reburied in-part and that no additional secondary cable protection will be used. These conditions, along with other mitigation measures will reduce impacts from the SRWF and allow the project to be consistent with enforceable policy § 11.10.1(I).

4.7 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

[94] *Id*. at 12; 41. 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.
[95] *Id*. at 47.

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.

Sunrise Wind Consistency Certification Response:

With respect to the SRWF lease area, the Developer states:

> The SRWF is consistent with this policy to the extent applicable. The SRWF does not include any components located in Rhode Island State waters. SRWF will be sited to avoid Areas of Particular Concern or will take all feasible efforts to avoid damage to the Areas of Particular Concern resources and values and there will be no significant alteration of the Areas of Particular Concern resources and values. (*See* COP Appendix C Table 3)

With respect to the SRWF export cable corridor, the Developer states:

> The SRWEC–OCS is consistent with this policy to the extent applicable. The SRWEC–OCS does not include any components located in Rhode Island State waters. The SRWEC–OCS will be sited to avoid Areas of Particular Concern or will take all feasible efforts to avoid damage to the Areas of Particular Concern resources and values and there will be no significant alteration of the Areas of Particular Concern resources and values. (*See* COP Appendix C Table 3)

4.7.1 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.[96] An enforceable policy cannot on its face dictate what a developer can or cannot do. 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 SRWF project. The enforceable policy's intent is to protect and preserve glacial moraine habitat areas identified within the CRMC's NOAA approved 2011 and 2018 Geographic Location Description areas[97] that have the same characteristics, values, and resources as CRMC designated APC located within State Waters. CRMC can utilize any information submitted by a developer over the course of the review process to determine whether adequate mitigation measures have been taken.

Based on geophysical surveys conducted by SRW, Staff was able to consider bottom habitats and site conditions in great detail.[98] As previously stated, the lease area is characterized by sporadic, unconsolidated boulder with few areas of glacial moraine along the norther edge of the lease boundary. NOAA NMFS has identified habitat priority areas based on cod spawning data, some of which are consistent with turbine positions that have been removed. As such, Sunrise Wind has demonstrated that adequate mitigation measures have been taken to avoid damaging areas of glacial moraine and complex habitat.

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[96] 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

[97] *See* 15 C.F.R.§ 930.53(a)(1).

[98] *See supra* Figure 4.

As noted above in enforceable policies §§ 11.10.1(C), (F), and (G), Sunrise Wind has made substantial modifications to the project plan and has agreed to conditions which will mitigate impacts to complex glacial moraine habitats by reducing the amount of project infrastructure.[99] Under Condition 1, SRW has guaranteed that three positions in the extreme northwest of the lease area which contain glacial moraine and dense boulders fields will not be built as part of this or any future offshore wind development. Condition 2 limits the Developer to building a maximum of 84 WTGs and one OCS-DC converter station thus reducing the number of positions. Condition 3 explicitly requires the Developer to make all practicable efforts to site project infrastructure outside of the Cox Ledge area. Condition 4 stipulates the existing out-of-service cable be removed in-part and reburied in-part and that no additional secondary cable protection will be used. These conditions, along with other mitigation measures will reduce impacts from the SRWF and allow the project to be consistent with enforceable policy § 11.10.2(B).

4.8 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.

Sunrise Wind Consistency Certification Response:

With respect to the SRWF lease area, the Developer states:

> The SRWF is consistent with this policy to the extent applicable. The SRWF does not include any components located in Rhode Island State waters. The SRWF will be sited to avoid Areas of Particular Concern or will take all feasible efforts to avoid damage to the

[99] *Supra* pp. 24 to 27.

> Areas of Particular Concern resources and values and there will be no significant alteration of the Areas of Particular Concern resources and values. (*See* COP Appendix C Table 3)

With respect to the SRWF export cable corridor, the Developer states:

> The SRWEC–OCS is consistent with this policy to the extent applicable. The SRWEC–OCS does not include any components located in Rhode Island State waters. The SRWEC–OCS will be sited to avoid Areas of Particular Concern or will take all feasible efforts to avoid damage to the Areas of Particular Concern resources and values and there will be no significant alteration of the Areas of Particular Concern resources and values. (*See* COP Appendix C Table 3)

4.8.1 CRMC Analysis:

For the reasons stated above under CRMC enforceable policy § 11.10.2(B), Staff finds that Sunrise Wind has mitigated impacts to glacial moraine in the SRWF 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).

5 Conclusion

Pursuant to 15 C.F.R. §§ 930.4 and 930.78, and for the reasons detailed herein, the CRMC Staff has determined that based on the mutually agreed upon conditions and other mitigation efforts that will be employed by the Developer, the proposed SRWF offshore wind renewable energy project can be deemed to comply with the enforceable policies of the Rhode Island coastal management program. Based on Staff's review of the SRWF Project and its effects on Rhode Island coastal resources and uses, Staff recommend the Council issue a **concurrence with conditions** in this matter. Additionally, CRMC Staff has reviewed all other applicable enforceable policies of the Ocean SAMP at 650-RICR-20-05-11 not specifically identified above and has determined that the SRWF Project is consistent with those enforceable policies.

Appendix 1 – CRMC Sunrise Wind 30-day Letter

State of Rhode Island
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 3
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-2069

September 27, 2021

Lia Howard
Ørsted Offshore North America
399 Boylston St., 12th Floor
Boston, MA 02116

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: Rhode Island CZMA federal consistency review 30-day letter for the Sunrise Wind project; Docket No. BOEM–2021–0052; CRMC File No.: 2021-09-036

Dear Ms. Howard and Ms. Morin,

The Rhode Island Coastal Resources Management Council (CRMC) is in receipt of the Sunrise Wind consistency certification that was filed by Sunrise Wind, LLC[1] with the CRMC on **September 1, 2021**, as required by 15 C.F.R. §§ 930.58 and 930.76. The Bureau of Ocean Energy Management (BOEM) issued its Notice of Intent on August 31, 2021 to prepare an Environmental Impact Statement for Sunrise Wind LLC's proposed wind energy facility offshore Rhode Island and located within BOEM Lease Area OCS-A 0487.

The CRMC is providing the following comments concerning necessary data and information (NDI) pursuant to 15 C.F.R. §§ 930.60(a)(2) and 930.77. The CRMC's enforceable policies for offshore wind projects are contained within § 11.10 of the CRMC's Ocean Special Area Management Plan found at: https://rules.sos.ri.gov/regulations/part/650-20-05-11.

The enforceable policies at §§ 11.10(D) and (J) require that a meeting with the 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(D)(1) and 11.10(J)(1)

[1] Sunrise Wind, LLC is a 50/50 joint venture between Ørsted and Eversource. See: https://sunrisewindny.com/

specify that "the CZMA six-month review period shall not begin until the day after" the FAB and HAB meetings, respectively.

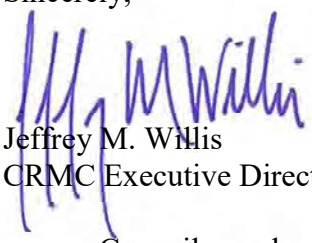
Accordingly, a meeting with the FAB and HAB are necessary data and information and the CZMA 6-month review period will not commence until such meeting with the FAB and HAB has been completed. The CRMC will endeavor to schedule a combined meeting of the FAB and HAB within approximately 30-days following the issuance of this letter so that the meeting will occur in a timely manner to ensure that the CZMA process is not delayed.

The CRMC requires a biological assessment of commercially and recreationally targeted fishery species as specified in Ocean SAMP §§ 11.10.6 and 11.9.9(E). A biological assessment of commercially and recreationally targeted species must be performed at least four times to include a minimum of two (2) complete years before offshore construction and installation activities begin, for each year of construction (if construction extends beyond one year) and three (3) complete years following completion of construction and installation activities and during the operational phase of the project. In review of the Sunrise Wind COP and appendices there is no fisheries monitoring plan included. There was, however, language within the Sunrise Wind consistency certification in response to enforceable policy § 11.10.1(I) that states in part that "Sunrise Wind is performing surveys to determine any impact on essential habitats and those species within the wind farm area and will be part of a fisheries monitoring plan." In addition, the consistency certification in response to enforceable policy § 11.10.6 states in part that "Sunrise Wind is committed to conducting monitoring as required under the Ocean SAMP. Sunrise Wind will coordinate with the Council in the development of any specific monitoring plans." Nevertheless, a fisheries monitoring plan is necessary data and information required by Ocean SAMP § 11.10.5(C)(2)(f)(1). Thus, Sunrise Wind will need to prepare and file with the CRMC a fisheries monitoring plan.

Pursuant to 15 C.F.R. §§ 930.60(a) and 930.77 the CRMC's six-month CZMA review period will not commence until such time that the necessary data and information requested herein is submitted to the CRMC.

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

Appendix 2 – CRMC Sunrise Wind CZMA Commencement Letter

State of Rhode Island
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 3
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-2069

October 28, 2021 (via email)

Michael Evans
Permit Manager, Sunrise Wind
Ørsted North America
56 Exchange Terrace, Suite300
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) federal consistency review commencement for the Sunrise Wind project; CRMC File 2021-09-036; Docket No. BOEM–2021–0052

Dear Mr. Evans and Ms. Morin,

Sunrise Wind, LLC[1] ("Sunrise Wind") filed a consistency certification with the Rhode Island Coastal Resources Management Council ("CRMC") on September 1, 2021 for the Sunrise Wind project, as required by 15 C.F.R. §§ 930.58 and 930.76. The CRMC subsequently issued a 30-day letter to Sunrise Wind pursuant to 15 C.F.R. § 930.60(a)(2) on September 27, 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 §§

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

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 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 for an overview of the Sunrise Wind project was held on October 27, 2021. Thus, in accordance with the afore noted state enforceable policies and the Federal consistency regulations, the CRMC's CZMA six-month review period for the Sunrise Wind project commenced on **October 28, 2021**.

We are writing to inform you of our position regarding the commencement of the CRMC's CZMA review period for the Sunrise 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, Executive Director
Coastal Resources Management Council

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

Enc. CRMC Sunrise Wind 30-day letter (September 27, 2021)
FAB/HAB October 27, 2021 Sunrise Wind meeting agenda

Appendix 3 – CRMC Sunrise Wind CZMA 3-month Letter

State of Rhode Island
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 3
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-2069

January 25, 2022

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

Mike Evans
Permit Manager, Sunrise Wind LLC
Ørsted Offshore North America
56, Exchange Terrace, Suite300
Providence, RI-02903

Jeffrey L. Payne, Ph.D., Director
National Oceanic and Atmospheric Administration
Office for Coastal Management N/OCM6
1305 East-West Highway, SSMC4
Silver Spring, MD 20910

Re: Rhode Island CZMA federal consistency review status for the Sunrise Wind offshore wind project; Docket No. BOEM–2021–0052; CRMC File No.: 2021-09-036

Dear Ms. Lefton and Messrs. Evans and Payne,

The purpose of this letter is to provide a status update, pursuant to the requirements of 15 C.F.R. § 930.78(a), on the Rhode Island Coastal Resources Management Council's (CRMC) federal consistency review of the proposed Sunrise Wind offshore wind project. The CRMC, at this time, is not issuing a concurrence or an objection to the Consistency Certification filed with the CRMC by Sunrise Wind LLC[1] for the reasons detailed herein. However, if the CRMC were required to issue a consistency decision at this time for the Sunrise Wind project, it would be an objection based on the information filed by Sunrise Wind to date with the CRMC, as the project is presently not consistent with the State's federally approved coastal management program enforceable policies, which are specified in the CRMC's Ocean Special Area Management Plan at 650-RICR-20-05-11. The CRMC is requesting additional information, as specified below, that is necessary to complete the CRMC federal consistency review for the Sunrise Wind project.

[1] Sunrise Wind, LLC is a 50/50 joint venture between Orsted North America Inc. and Eversource Investment LLC. See: https://sunrisewindny.com

Furthermore, the CRMC and Sunrise Wind LLC have mutually entered into an agreement to stay the CRMC federal consistency review of the project until October 21, 2022 with a final consistency decision issued by the CRMC no later than March 2, 2023[2]. This stay agreement will provide an opportunity for the CRMC to review project alternatives, including a habitat minimization alternative(s), that will be integrated into the Bureau of Ocean Energy Management (BOEM) Draft Environmental Impact Statement (DEIS) to be issued by BOEM on or about October 21, 2022.

On August 31, 2021 BOEM issued a Notice of Intent (NOI) in the Federal Register to prepare an Environmental Impact Statement for Sunrise Wind LLC's proposed offshore wind energy facility. *See* FR Vol. 86 at 48763. Then on September 3, 2021 BOEM issued a NOI for an extension of comment period and technical corrections. *Id* at 49563. The CRMC on September 28, 2021 submitted scoping comments (BOEM-2021-0052-0007) to BOEM on the Sunrise Wind construction and operation plan (COP).

The proposed Sunrise Wind offshore wind project will be located on the Outer Continental Shelf (OCS) within BOEM Lease Area OCS-A 0487[3] approximately 16.7 mi (14.5 nm) southeast from Block Island, Rhode Island. The Sunrise Wind project consists of up to 102[4] wind turbine generators (WTGs), a direct current seawater cooled offshore converter station (OCS–DC), and an export cable bundle comprised of two direct current cables traversing through both Federal and New York State waters to a landfall at Brookhaven, Long Island, New York. The wind farm (SRWF), the OCS-DC and a portion of the export cable (SRWEC) are located within the CRMC's 2011 and 2018 Geographic Location Descriptions (GLD). Offshore wind facilities and underwater cables are listed activities, pursuant to 15 C.F.R. § 930.53, within the CRMC's federally approved coastal management program. Therefore, the Sunrise Wind 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.

On September 1, 2021 Sunrise Wind LLC filed with the CRMC a Consistency Certification for the proposed Sunrise Wind project as required by 15 C.F.R. §§ 930.58 and 930.76. The CRMC subsequently issued a 30-day letter on September 27, 2021 to Sunrise 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 Special Area Management Plan (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

[2] BOEM was notified on December 13, 2021 by letter of transmittal from the CRMC including the stay agreement executed on December 10, 2021.

[3] A portion of Lease Area OCS-A 0500 (Bay State Wind LLC) and the entirety of Lease Area OCS-A 0487 (formerly Deepwater Wind New England LLC) were assigned to Sunrise Wind LLC on September 3, 2020, and the two areas were merged with a revised Lease OCS-A 0487 issued by BOEM on March 15, 2021.

[4] Following the Sunrise Wind consistency certification filing with the CRMC on September 1, 2021, the project was modified to reduce the overall number of WTGs from a maximum of 122 to 102 in the revised October 29, 2021 Construction and Operation Plan.

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 October 27, 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 Sunrise Wind project began on October 28, 2021[5]. Accordingly, the CRMC's 3-month CZMA review status letter, required by 15 C.F.R. § 930.78(a), is due on or before January 28, 2022.

Appendix C (dated August 23, 2021) of the Sunrise Wind COP provides Coastal Zone Management Consistency Statements for Massachusetts, New York and Rhode Island. Section 4.0 of Appendix C specifically addresses consistency with Rhode Island's enforceable policies of the Ocean SAMP at 650-RICR-20-05-11. Additionally, Table 3 separately addresses enforceable policies of the Rhode Island coastal program for the SRWF and the SRWEC on the OCS (SRWEC-OCS). The CRMC enforceable policy discussion within each of the following sections applies to both the SRFW and the SRWEC 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 information necessary for evaluation of the Sunrise 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*

[5] The CRMC notified BOEM and Sunrise Wind LLC in a letter dated October 28, 2021 that commencement of the CRMC CZMA consistency review for the Sunrise Wind project began on October 28, 2021.

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.

Sunrise Wind's response to this enforceable policy states that "The [SRWF and SRWEC–OCS] is consistent with this policy. The [SRWF and SRWEC–OCS] will not have significant adverse impact on the natural resources or human uses of the area. Current activities will be able to continue post construction." *See* Table 3 Rhode Island CRMP Certification at 11.10.1(C). While it is conceivable that current commercial and recreational fishing operations may be able to continue operating at some level of activity post-construction of the Sunrise Wind project, it is not yet clear based on currently available information as to what modifications to the project may be necessary to avoid likely adverse 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 coastal uses and resources 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. Further, the CRMC and the developers agreed to compensatory fisheries mitigation for unavoidable adverse impacts from both projects. As noted by the National Marine Fisheries Service (NMFS) the Sunrise Wind lease area is located along and overlaps the southern edge of Cox Ledge a large area of complex marine habitat. Cox Ledge is an important area for fishing activity, and 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. See NMFS Scoping Comments Letter to BOEM (Sept. 30, 2021) at A-2. A portion of the project overlaps substantial hard bottom complex habitat that is Essential Fish Habitat (EFH) for a number of managed fish species, including Atlantic Cod fish. Further, the project area overlaps with spawning habitat for Atlantic cod, which is a species of economic and cultural significance to the region. And, a portion of the lease area in the northwest corner appears to overlap with CRMC designated Area of Particular Concern (APC), designated as such due to glacial moraine characteristics. The Sunrise Wind COP shows the lease area in relation to glacial moraine in Figure 4.3.2-1, but there is no graphic within the COP that shows whether any proposed turbine foundations, inter-array cables or other foundations structures will be located within these glacial moraine areas.

The NMFS recommended to BOEM that a habitat minimization alternative(s) be included within the Environmental Impact Statement (EIS) to minimize effects of the project on important habitats. The alternative should evaluate "not just impacts of WTG construction and operation, but also ways to minimize impacts from cables on sensitive habitats." *Id*. The NMFS also stated that "the alternative should evaluate the habitat data and identify areas where construction should be avoided.

Id. The CRMC anticipates that such alternative(s) will be part of the Draft EIS when made available by BOEM on or about October 21, 2022. We anticipate that project modifications will be necessary to avoid both temporary and long-term adverse impacts to sensitive marine habitats and the commercial and recreational fishermen that rely upon the fisheries resources dependent upon these complex marine habitats. We anticipate that mitigation will likely be necessary for the Sunrise Wind project, as it was for the Vineyard Wind and South Fork Wind projects.

Sunrise Wind needs to conduct an a socio-economic impact analysis of the project on commercial and recreational fisheries for Rhode Island-based vessels harvesting/fishing within the Sunrise 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 Sunrise Wind Draft EIS scheduled to be issued by BOEM on or about October 21, 2022. Sunrise Wind will need to provide evidence to the CRMC as part of its CZMA federal consistency review 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 Sunrise Wind project is consistent with this enforceable policy, as stated within its consistency certification.

CRMC 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.*

Sunrise Wind's response to this enforceable policy states that "The SRWF is consistent with this policy. There are no expected significant long-term negative impacts to Rhode Island's commercial or recreational fisheries from the SRWF." However, based on the comments submitted by NMFS, the agency is recommending that BOEM avoid/minimize impacts to fishery resources and existing and anticipated future fishing operations from the Sunrise Wind project. NMFS also indicated that the Sunrise Wind project could alter EFH for certain species, while construction activities and noise could disrupt spawning behavior, mask species communications, and negatively impact eggs and larvae. These effects will have short- and potentially long-term impacts to such resources and resulting consequences to fisheries that target them. Apart from indirect biological impacts, the project could result in direct impacts to fishing operations in the form of reduced area access, increased steaming time, and navigational/operational impediments. *See* NMFS Scoping Comments Letter to BOEM (Sept. 30, 2021) at A-27-28. Consequently, based on the information available at this time, the CRMC is unable to conclude that there would not be any significant long-term negative impacts to Rhode Island's commercial or recreational fisheries. The CRMC anticipates that the issues of significant long-term negative impacts will be addressed in the BOEM DEIS, as requested by NMFS.

CRMC 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.*

Sunrise Wind's response to this enforceable policy in Table 3 states that "The SRWF is consistent with this policy. Sunrise Wind has evaluated and considered potential adverse impacts from the SRWF and made substantial modifications to the SRWF to mitigate any potential adverse impacts. To the extent any reasonably foreseeable potential impacts remain after consideration of the project modifications, Sunrise Wind will engage in mitigation negotiations pursuant to the Ocean SAMP enforceable policies. Environmental protection measures will be adopted to mitigate any potential impacts from the SRWF." Nevertheless, the full extent of potential adverse impacts have not yet been fully evaluated by BOEM has yet to consider project modifications as the DEIS has not yet been issued, and it is likely that BOEM may require a habitat minimization alternative, as recommended by NMFS. Further, Sunrise Wind has yet to file with the CRMC a socio-economic impact analysis of the project on commercial and recreational fisheries that will be the basis for any fisheries mitigation negotiations, and no mitigation negotiations have yet taken place between the CRMC, the FAB and Sunrise Wind. Accordingly, Sunrise Wind is not presently consistent with this enforceable policy.

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.*

Sunrise Wind's response to this enforceable policy in Table 3 states that "The SRWF is consistent with this policy. The SRWF will be sited to avoid Areas of Particular Concern, or will take all feasible efforts to avoid damage to the Areas of Particular Concern resources and values and there will be no significant alteration of the Areas of Particular Concern resources and values." As noted above in discussion of enforceable policy § 11.10.1(C), the Sunrise Wind lease area is located along and overlaps the southern edge of Cox Ledge a large area of complex marine habitat. Cox ledge is a glacial moraine, and therefore the Sunrise Wind project is located along and overlaps the edge of a glacial moraine. Furthermore, Sunrise Wind has not provided any evidence or graphics to demonstrate whether any proposed turbine foundations, inter-array cables or other foundations structures will be located within these glacial moraine areas. Notwithstanding the statement by Sunrise Wind that it "will take all feasible efforts to avoid damage to the Areas of Particular Concern resources and values," absent appropriate graphics to determine proximity to and avoidance of glacial

moraine, the CRMC at this time is unable to conclude that Sunrise Wind is consistent with this enforceable policy.

CRMC 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.*

The Sunrise Wind consistency certification states that "the SRWF is consistent with this policy to the extent applicable. Sunrise Wind is performing surveys to determine any impact on essential habitats and those species within the wind farm area and will be part of a fisheries monitoring plan." The CRMC is undergoing its CZMA federal consistency review of the Sunrise Wind now, and must complete that review before issuing a final consistency decision on or before March 2, 2023. However, the draft Sunrise Wind fisheries monitoring plan filed with the CRMC is incomplete and does not cover species of shellfish and crustaceans that are targeted by Rhode Island-based commercial fishermen. Thus, Sunrise Wind will not be able to determine any impacts on essential species because they are not included within the current draft fisheries monitoring plan.

NOAA NMFS stated within their September 30, 2021 Sunrise Wind scoping comments letter to BOEM that "based on preliminary review of information from early coordination meetings we expect complex habitat areas to be found along the northern project boundary, where the project overlaps with Cox Ledge and known areas of cod spawning activities. There may also be large areas of complex habitats along the central and eastern portions of the lease area. The alternative should evaluate the habitat data and identify areas where construction should be avoided or where micrositing should be considered to minimize impacts. The alternative should not only consider locations for turbine removal and/or micrositing, but also consider portions of the lease where cod spawning aggregations have been detected and areas dominated by complex habitats that provide important functions for associated living marine resources, such as Atlantic cod." *See* NOAA NMFS Scoping Comments Letter to BOEM (Sept. 30, 2021) at A-2.

We agree with NMFS that a habitat minimization alternative should be considered for the Sunrise Wind project that minimizes effects on complex habitats that support spawning and nursery areas. The CRMC may require project modifications as a condition of any final consistency decision to avoid and minimize sensitive habitat impacts resulting from construction and operation of the Sunrise Wind project. In addition, the CRMC requires a revised fisheries and benthic habitat monitoring plan to account for species harvested by Rhode Island-based commercial fishermen within the Sunrise lease and export cable areas.

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 Sunrise Wind project area. As noted above, the Sunrise Wind lease area is located along the southern edge of Cox Ledge, and the northwest portion of the lease area in particular overlaps hard bottom complex habitat, which supports EFH and 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 June 7, 2021 Letter at 4. This glacial moraine habitat in the SFW lease is part of the same habitat complex located along the Sunrise Wind project boundary.

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. 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. Sunrise 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, Sunrise Wind has not demonstrated that they have sited the project to avoid APC as they claim within their consistency certification statement. Thus, the Sunrise Wind project is not consistent with this enforceable policy.

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 Sunrise 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 Sunrise 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 C-Table 3.

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. The Sunrise Wind consistency certification 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 C – Table 3. There is no graphic or other evidence within the COP that clearly shows that the Sunrise 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 Sunrise Wind 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 Sunrise Wind consistency certification (Appendix C – Table 3).

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, Sunrise 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 data and information provided by Sunrise Wind to the CRMC does not support Sunrise Wind's statements of consistency for some CRMC enforceable policies, as detailed herein. I am requesting that Sunrise Wind provide the data and information specified herein and listed below **within sixty (90) days from the date of this letter** so that the CRMC can further evaluate and determine whether the Sunrise 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 with a final consistency no later than **March 2, 2023**, the CRMC would have to conclude that the Sunrise Wind project is not consistent with the Rhode Island coastal management program, and would then have to object to the Sunrise Wind Consistency Certification pursuant to 15 CFR §§ 930.63(c) and 930.78.

C. Requested supplemental information necessary for CRMC review

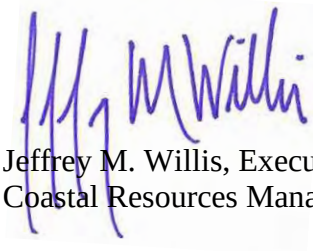
1. Sunrise Wind must submit a detailed graphic or graphics that clearly delineate the CRMC identified **glacial moraine** (identified as Areas of Particular Concern within Ocean SAMP § 11.10.2) in relation to the proposed turbine foundations, inter-array cable network, and any other proposed structures that are located in the northwestern portion of the SRWF. The graphic(s) must clearly distinguish wind turbine foundations, offshore substations, offshore converter station, inter-array cables and any other proposed structures located within or close proximity of CRMC identified glacial moraine (APC) as identified and demarcated in Figure 3 in § 11.10.2(F) of the Ocean SAMP.
2. Sunrise Wind must provide an **alternative project layout** inclusive of all project elements (i.e., turbine foundations, offshore substation, offshore converter station, inter-array cables and export cables) that avoids and does not overlay glacial moraine and moraine edges. This alternative could be the appropriate habitat minimization alternative that "identifies areas where construction should be avoided" as NMFS requested in their September 30, 2021 Sunrise Wind EIS scoping comments letter.
3. Sunrise Wind must submit a **socio-economic impact analysis of the project on commercial and recreational fisheries** for Rhode Island-based vessels harvesting/fishing within the Sunrise Wind lease area and along the export cable corridor that takes into account construction, operation and decommissioning phases over the life of the Sunrise Wind 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 include 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 consider by the CRMC for evaluating likely adverse impacts under the enforceable policies.
4. Sunrise Wind must submit a **revised Fisheries and Benthic Monitoring Plan**, as specified within the CRMC email to the Sunrise Wind project manager on January 13, 2022. See attached email. In particular the CRMC noted that the Plan did not include a specific monitoring proposal for Sea Scallops, which are the second most valuable species harvested within the SRWF Lease Area from 2008 through 2019, and the Plan did not include a ventless trap survey, despite similar surveys included as part of the nearby adjacent Revolution Wind and South Fork monitoring plans (Ørsted is the parent company for all three wind energy projects).

Based on the CRMC's CZMA commencement review date of October 28, 2021, and the current effective stay agreement between CRMC and Sunrise Wind LLC, a final decision for concurrence or objection to the Sunrise Wind Consistency Certification must be issued by the CRMC no later than March 2, 2023 pursuant to 15 C.F.R. §§ 930.62, 930.63 and 930.78. Absent the requested information described herein that is necessary to support a final CRMC federal consistency

decision within the specified CZMA review period, the CRMC will have to conclude that the Sunrise Wind project is not consistent with the enforceable policies of the Ocean SAMP, and the CRMC would therefore have to issue an objection to the Sunrise Wind Consistency Certification.

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

Sincerely,



Jeffrey M. Willis, Executive Director
Coastal Resources Management Council

/lat

cc: CRMC Council Members
Anthony DeSisto, Esq., CRMC Legal Counsel
James R. Boyd, CRMC Deputy Director
David Kaiser, NOAA OCM Senior Policy Analyst (via email)
Allison Castellan, NOAA OCM Coastal Management Specialist (via email)
CRMC File 2021-09-036

Appendix 4 – CRMC Sunrise Wind Stay Agreements & BOEM Notice of Stay Letters

State of Rhode Island
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 3
Wakefield, RI 02879-1900

Phone (401) 783-3370
Fax (401) 783-2069

June 1, 2023

Elizabeth Klein, 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: **Sunrise Wind, LLC**; Docket No. BOEM-2021-0052
CRMC File 2021-09-036

Dear Director Klein and Mr. Bennett,

Pursuant to 15 C.F.R. § 930.76, Sunrise Wind, LLC on September 1, 2021 filed with the Rhode Island Coastal Resources Management Council ("CRMC") a federal consistency certification for the proposed construction and operation of the Sunrise Wind offshore wind renewable energy project consisting of up to 94 wind turbine generators[1] (WTGs) at 102 potential locations and an export cable that will make landfall at Brookhaven, Long Island, New York. The Sunrise Wind project is contracted with New York State Energy Research & Development to deliver 880 megawatts (MW) and up to 924 MW of offshore wind-generated electricity under a 25-year Offshore Wind Renewable Energy Certificate Agreement executed in 2019. The Sunrise Wind Construction and Operation Plan describes the project as having an operating capacity ranging between 924 and 1,122 MW.

The proposed Sunrise Wind project is a listed activity subject to CRMC federal consistency review 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.

[1] Following the Sunrise Wind consistency certification filing with the CRMC, the project was modified to reduce the overall number of WTGs from a maximum of 122 to 94 at 102 potential locations in the revised April 8, 2022, Construction and Operation Plan.

The CRMC's CZMA six-month review period for the Sunrise Wind project began on October 28, 2021.[2] The first stay agreement between Sunrise Wind and the CRMC was executed on December 10, 2021 and provided for the State's CZMA decision date on or before March 2, 2023. Sunrise Wind and CRMC subsequently amended the first stay agreement to provide additional time to review the project. The amended stay required the CRMC consistency decision be issued on or before April 27, 2023. The third stay agreement began on March 17, 2023, and ended April 20, 2023. The fourth stay agreement began May 2, 2023, and was slated to end on June 26, 2023. This fifth stay agreement began on May 31, 2023, and is necessary for the parties to continue discussions surrounding Sunrise Wind's consistency with Rhode Island's enforceable policies and reflects delays in the federal permitting schedule. **As such, the CRMC federal consistency decision in this matter is now due no later than September 8, 2023.**

The purpose of this letter is to notify the Bureau of Ocean Energy Management of this stay agreement between the parties pursuant to the requirements of 15 C.F.R. § 930.60(b). In addition, the CRMC requests BOEM not to issue a license or permit to Sunrise 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 Mike Evans, Project Manager, Sunrise Wind, LLC
David Kaiser. NOAA
Allison Castellan, NOAA
Anthony DeSisto, Esq., CRMC Legal Counsel

[2] The CRMC notified BOEM and Sunrise Wind in a letter dated October 28, 2021 that commencement of the CRMC CZMA consistency review for the Sunrise Wind project began on October 28, 2021.

State of Rhode Island
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 116
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-3767

FIFTH AGREEMENT TO STAY SIX-MONTH REVIEW PERIOD

Between

Rhode Island Coastal Resources Management Council

And

Sunrise Wind, LLC

The Rhode Island Coastal Resources Management Council, hereinafter referred to as the "CRMC," and Sunrise Wind, LLC[1] hereinafter referred to as "Sunrise Wind," hereby agree as follows.

Pursuant to 15 CFR § 930.76, Sunrise Wind filed a federal consistency certification with the CRMC on September 1, 2021, for the proposed construction and operation of a wind energy project on the outer continental shelf (OCS), known as Sunrise Wind, consisting of up to 94 wind turbine generators[2] (WTGs) at 102 potential locations and an export cable that will make landfall at Brookhaven, Long Island, New York. The Sunrise Wind project has been assigned CRMC File 2021-09-036 and is identified on the Federal docket as BOEM-2021-0052. The proposed wind turbine generators will be located within BOEM Lease Area OCS-A 0487 and approximately 16.7 mi (14.5 nm, 26.8 km) southeast of Block Island, Rhode Island. The proposed Sunrise Wind project is a listed activity 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 first stay agreement between Sunrise Wind and the CRMC was executed on December 10, 2021, and provided for the State's CZMA decision date on or before March 2,

[1] Sunrise Wind, LLC is a 50/50 joint venture between Orsted North America Inc. and Eversource Investment LLC.
[2] Following the Sunrise Wind consistency certification filing with the CRMC, the project was modified to reduce the overall number of WTGs from a maximum of 122 to 94 at 102 potential locations in the revised April 8, 2022 Construction and Operation Plan.

2023. A mutually agreed to amendment to the first stay (second stay) was executed on September 27, 2022, which provided for the State's CZMA decision date on or before April 27, 2023. The second stay was necessary to allow adequate time for the release of BOEM's Draft Environmental Impact Statement (DEIS) for the Sunrise Wind project and for the CRMC to review those documents. The DEIS was issued on December 23, 2022. The third stay agreement was necessary to allow the CRMC the appropriate time to continue its review of the Sunrise Wind project given the unprecedented number and schedule of offshore wind projects under review. The fourth stay agreement was necessary to continue CRMC's review as the project was further refined. This fifth stay agreement will allow mitigation discussions to continue, provides additional time to review, and reflects changes in permitting timeframes at the federal level.

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 Sunrise Wind project consistency with the State's enforceable policies, the CRMC and Sunrise Wind mutually agree to the following dates and to stay the CRMC CZMA six-month review period as specified herein.

First Stay

- Date the CRMC 6-month review period commence: October 28, 2021
- Date the 6-month review period was to end: April 28, 2022
- Date during the 6-month review period the first stay began: December 15, 2021
- Date the first stay ended: October 21, 2022
  (132 days remaining in the 6-month review)
- Date the 6-month review period was to end and
  the CRMC consistency decision was due: March 2, 2023

Second Stay (*amended first stay*)

- Date first stay was to end: October 21, 2022
- Second amended stay ended: December 16, 2022
  (132 days remaining in the 6-month review period)
- Date 6-month review period was to end and
  the CRMC consistency decision was due: April 27, 2023

Third Stay

- Date during the 6-month review period the third stay begins: March 17, 2023
- Date the third stay ended: April 20, 2023
  (41 days remaining in the 6-month review period)
- Date the 6-month review period was to end and
  the CRMC consistency decision was due: May 31, 2023

Fourth Stay

- Date during the 6-month review period the fourth stay begins: May 2, 2023
- Date the fourth stay ends: June 26, 2023
  (29 days remaining in the 6-month review period)
- Date the 6-month review period is to end and
  the CRMC consistency decision is due: July 25, 2023

Fifth Stay

- Date during the 6-month review period the fifth stay begins: May 31, 2023
- Date the fifth stay ends: August 10, 2023
  (29 days remaining in the 6-month review period)
- Date the 6-month review period is to end and
  the CRMC consistency decision is due: September 8, 2023

The CRMC will issue its federal consistency decision on or before Friday, **September 8, 2023,** unless Sunrise 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 September 8, 2023.

This agreement made and entered by:

Jeffrey M. Willis
Executive Director, CRMC

6/1/2023
Date

Sunrise Wind LLC,

Ryan Chaytors,
Authorized Person

5/31/2023
Date

Kenneth Bowes,
~~Authorized~~ Person

5/31/2023
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
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-2069

May 3, 2023

Elizabeth Klein, 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: **Sunrise Wind, LLC**; Docket No. BOEM-2021-0052
CRMC File 2021-09-036

Dear Director Klein and Mr. Bennett,

Pursuant to 15 C.F.R. § 930.76, Sunrise Wind, LLC on September 1, 2021 filed with the Rhode Island Coastal Resources Management Council ("CRMC") a federal consistency certification for the proposed construction and operation of the Sunrise Wind offshore wind renewable energy project consisting of up to 94 wind turbine generators[1] (WTGs) at 102 potential locations and an export cable that will make landfall at Brookhaven, Long Island, New York. The Sunrise Wind project is contracted with New York State Energy Research & Development to deliver 880 megawatts (MW) and up to 924 MW of offshore wind-generated electricity under a 25-year Offshore Wind Renewable Energy Certificate Agreement executed in 2019. The Sunrise Wind Construction and Operation Plan describes the project as having an operating capacity ranging between 924 and 1,122 MW.

The proposed Sunrise Wind project is a listed activity subject to CRMC federal consistency review 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.

[1] Following the Sunrise Wind consistency certification filing with the CRMC, the project was modified to reduce the overall number of WTGs from a maximum of 122 to 94 at 102 potential locations in the revised April 8, 2022 Construction and Operation Plan.

The CRMC's CZMA six-month review period for the Sunrise Wind project began on October 28, 2021.[2] The first stay agreement between Sunrise Wind and the CRMC was executed on December 10, 2021 and provided for the State's CZMA decision date on or before March 2, 2023. Sunrise Wind and CRMC subsequently amended the first stay agreement to provide additional time to review the project. The amended stay required the CRMC consistency decision be issued on or before April 27, 2023. The third stay agreement began on March 17, 2023, and ended April 20, 2023. This fourth stay agreement is necessary to allow the CRMC additional time to review the project due in-part to the unprecedented number and schedule of offshore wind projects under review. As such, the CRMC and Sunrise Wind, LLC have mutually agreed to a fourth stay of the CRMC CZMA six-month federal consistency review period as specified in the attached stay agreement executed on March May 3, 2023. **Pursuant to the agreement, the CRMC federal consistency decision in this matter is now due no later than July 25, 2023.**

The purpose of this letter is to notify the Bureau of Ocean Energy Management of this stay agreement between the parties pursuant to the requirements of 15 C.F.R. § 930.60(b). In addition, the CRMC requests BOEM not to issue a license or permit to Sunrise 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 Mike Evans, Project Manager, Sunrise Wind, LLC
David Kaiser. NOAA
Allison Castellan, NOAA
Anthony DeSisto, Esq., CRMC Legal Counsel

[2] The CRMC notified BOEM and Sunrise Wind in a letter dated October 28, 2021 that commencement of the CRMC CZMA consistency review for the Sunrise Wind project began on October 28, 2021.

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Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 116
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(401) 783-3370
Fax (401) 783-3767

FOURTH AGREEMENT TO STAY SIX-MONTH REVIEW PERIOD

Between

Rhode Island Coastal Resources Management Council

And

Sunrise Wind, LLC

The Rhode Island Coastal Resources Management Council, hereinafter referred to as the "CRMC," and Sunrise Wind, LLC[1] hereinafter referred to as "Sunrise Wind," hereby agree as follows.

Pursuant to 15 CFR § 930.76, Sunrise Wind filed a federal consistency certification with the CRMC on September 1, 2021, for the proposed construction and operation of a wind energy project on the outer continental shelf (OCS), known as Sunrise Wind, consisting of up to 94 wind turbine generators[2] (WTGs) at 102 potential locations and an export cable that will make landfall at Brookhaven, Long Island, New York. The Sunrise Wind project has been assigned CRMC File 2021-09-036 and is identified on the Federal docket as BOEM-2021-0052. The proposed wind turbine generators will be located within BOEM Lease Area OCS-A 0487 and approximately 16.7 mi (14.5 nm, 26.8 km) southeast of Block Island, Rhode Island. The proposed Sunrise Wind project is a listed activity 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 first stay agreement between Sunrise Wind and the CRMC was executed on December 10, 2021, and provided for the State's CZMA decision date on or before March 2,

[1] Sunrise Wind, LLC is a 50/50 joint venture between Orsted North America Inc. and Eversource Investment LLC.
[2] Following the Sunrise Wind consistency certification filing with the CRMC, the project was modified to reduce the overall number of WTGs from a maximum of 122 to 94 at 102 potential locations in the revised April 8, 2022 Construction and Operation Plan.

2023. A mutually agreed to amendment to the first stay (second stay) was executed on September 27, 2022, which provided for the State's CZMA decision date on or before April 27, 2023. The second stay was necessary to allow adequate time for the release of BOEM's Draft Environmental Impact Statement (DEIS) for the Sunrise Wind project and for the CRMC to review those documents. The DEIS was issued on December 23, 2022. The third stay agreement was necessary to allow the CRMC the appropriate time to complete its review of the Sunrise Wind project given the unprecedented number and schedule of offshore wind projects under review. The fourth stay agreement amends the third stay and is necessary for the same reasons as the third stay agreement.

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 Sunrise Wind project consistency with the State's enforceable policies, the CRMC and Sunrise Wind mutually agree to the following dates and to stay the CRMC CZMA six-month review period as specified herein.

First Stay

- Date the CRMC 6-month review period commence: October 28, 2021
- Date the 6-month review period was to end: April 28, 2022
- Date during the 6-month review period the first stay began: December 15, 2021
- Date the first stay ended: October 21, 2022
  (132 days remaining in the 6-month review)
- Date the 6-month review period was to end and
  the CRMC consistency decision was due: March 2, 2023

Second Stay (*amended first stay*)

- Date first stay was to end: October 21, 2022
- Second amended stay ended: December 16, 2022
  (132 days remaining in the 6-month review period)
- Date 6-month review period was to end and
  the CRMC consistency decision was due: April 27, 2023

Third Stay

- Date during the 6-month review period the third stay begins: March 17, 2023
- Date the third stay ended: April 20, 2023
  (41 days remaining in the 6-month review period)
- Date the 6-month review period was to end and
  the CRMC consistency decision was due: May 31, 2023

Fourth Stay

- Date during the 6-month review period the fourth stay begins: May 2, 2023
- Date the fourth stay ends: June 26, 2023
  (29 days remaining in the 6-month review period)
- Date the 6-month review period is to end and
  the CRMC consistency decision is due: July 25, 2023

The CRMC will issue its federal consistency decision on or before Tuesday, **July 25, 2023,** unless Sunrise 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 July 25, 2023.

This agreement made and entered by:

Jeffrey M. Willis
Executive Director, CRMC

MAY 3, 2023
Date

Sunrise Wind LLC,
by its agent,
Orsted Wind Power North America LLC

Ryan Chaytors,
Authorized Person

5/2/2023
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
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-2069

March 21, 2023

Elizabeth Klein, 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: **Sunrise Wind, LLC**; Docket No. BOEM-2021-0052
CRMC File 2021-09-036

Dear Director Klein and Mr. Bennett,

Pursuant to 15 C.F.R. § 930.76, Sunrise Wind, LLC on September 1, 2021 filed with the Rhode Island Coastal Resources Management Council ("CRMC") a federal consistency certification for the proposed construction and operation of the Sunrise Wind offshore wind renewable energy project consisting of up to 94 wind turbine generators[1] (WTGs) at 102 potential locations and an export cable that will make landfall at Brookhaven, Long Island, New York. The Sunrise Wind project is contracted with New York State Energy Research & Development to deliver 880 megawatts (MW) and up to 924 MW of offshore wind-generated electricity under a 25-year Offshore Wind Renewable Energy Certificate Agreement executed in 2019. The Sunrise Wind Construction and Operation Plan describes the project as having an operating capacity ranging between 924 and 1,122 MW.

The proposed Sunrise Wind project is a listed activity subject to CRMC federal consistency review 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.

[1] Following the Sunrise Wind consistency certification filing with the CRMC, the project was modified to reduce the overall number of WTGs from a maximum of 122 to 94 at 102 potential locations in the revised April 8, 2022 Construction and Operation Plan.

The CRMC's CZMA six-month review period for the Sunrise Wind project began on October 28, 2021.[2] The first stay agreement between Sunrise Wind and the CRMC was executed on December 10, 2021 and provided for the State's CZMA decision date on or before March 2, 2023. Sunrise Wind and CRMC subsequently amended the first stay agreement to provide additional time to review the project. The amended stay required the CRMC consistency decision be issued on or before April 27, 2023. This third stay agreement is necessary to allow the CRMC additional time to review the project due in-part to the unprecedented number and schedule of offshore wind projects under review. As such, the CRMC and Sunrise Wind, LLC have mutually agreed to a third stay of the CRMC CZMA six-month federal consistency review period as specified in the attached stay agreement executed on March 21, 2023. **Pursuant to the agreement, the CRMC federal consistency decision in this matter is now due no later than <u>May 31, 2023</u>.**

The purpose of this letter is to notify the Bureau of Ocean Energy Management of this stay agreement between the parties pursuant to the requirements of 15 C.F.R. § 930.60(b). In addition, the CRMC requests BOEM not to issue a license or permit to Sunrise 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 Mike Evans, Project Manager, Sunrise Wind, LLC
David Kaiser. NOAA
Allison Castellan, NOAA
Anthony DeSisto, Esq., CRMC Legal Counsel

[2] The CRMC notified BOEM and Sunrise Wind in a letter dated October 28, 2021 that commencement of the CRMC CZMA consistency review for the Sunrise Wind project began on October 28, 2021.

State of Rhode Island
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 116
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-3767

THIRD AGREEMENT TO STAY SIX-MONTH REVIEW PERIOD

Between

Rhode Island Coastal Resources Management Council

And

Sunrise Wind, LLC

The Rhode Island Coastal Resources Management Council, hereinafter referred to as the "CRMC," and Sunrise Wind, LLC[1] hereinafter referred to as "Sunrise Wind," hereby agree as follows.

Pursuant to 15 CFR § 930.76, Sunrise Wind filed a federal consistency certification with the CRMC on September 1, 2021 for the proposed construction and operation of a wind energy project on the outer continental shelf (OCS), known as Sunrise Wind, consisting of up to 94 wind turbine generators[2] (WTGs) at 102 potential locations and an export cable that will make landfall at Brookhaven, Long Island, New York. The Sunrise Wind project has been assigned CRMC File 2021-09-036 and is identified on the Federal docket as BOEM-2021-0052. The proposed wind turbine generators will be located within BOEM Lease Area OCS-A 0487 and approximately 16.7 mi (14.5 nm, 26.8 km) southeast from Block Island, Rhode Island. The proposed Sunrise Wind project is a listed activity 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 first stay agreement between Sunrise Wind and the CRMC was executed on December 10, 2021 and provided for the State's CZMA decision date on or before March 2,

[1] Sunrise Wind, LLC is a 50/50 joint venture between Orsted North America Inc. and Eversource Investment LLC.
[2] Following the Sunrise Wind consistency certification filing with the CRMC, the project was modified to reduce the overall number of WTGs from a maximum of 122 to 94 at 102 potential locations in the revised April 8, 2022 Construction and Operation Plan.

2023. A mutually agreed to amendment to the first stay (second stay) was executed on September 27, 2022 which provided for the State's CZMA decision date on or before April 27, 2023. The second stay was necessary to allow adequate time for the release of BEOM's Draft Environmental Impact Statement (DEIS) for the Sunrise Wind project and for the CRMC to review document. The DEIS was issued on December 23, 2022. The third stay agreement is necessary to allow the CRMC the appropriate time to complete its review of the Sunrise Wind project given the unprecedented number and schedule of offshore wind projects under review.

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 Sunrise Wind project consistency with the State's enforceable policies, the CRMC and Sunrise Wind mutually agree to the following dates and to stay the CRMC CZMA six-month review period as specified herein.

First Stay

- Date the CRMC 6-month review period commence: October 28, 2021
- Date the 6-month review period was to end: April 28, 2022
- Date during the 6-month review period the first stay began: December 15, 2021
- Date the first stay ended: October 21, 2022
  (132 days remaining in the 6-month review)
- Date the 6-month review period was to end and
  the CRMC consistency decision was due: March 2, 2023

Second Stay (*amended the first stay*)

- Date first stay was to end: October 21, 2022
- Second amended stay ended: December 16, 2022
  (132 days remaining in the 6-month review period)
- Date 6-month review period was to end and
  the CRMC consistency decision was due: April 27, 2023

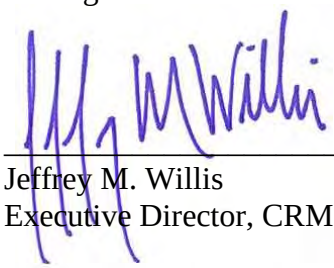
Third Stay

- Date during the 6-month review period that the stay begins: March 17, 2023
- Date the stay ends: April 20, 2023
  (41 days remaining in the 6-month review period)
- Date the 6-month review period is to end and
  the CRMC consistency decision is due: May 31, 2023

The CRMC will issue its federal consistency decision on or before **May 31, 2023** unless Sunrise 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 31, 2023.

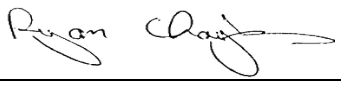
This agreement made and entered by:



_3/21/2023_
Date

Jeffrey M. Willis
Executive Director, CRMC

Sunrise Wind LLC,
by its agent,
Orsted Wind Power North America LLC



3/20/2023
Date

Ryan Chaytors,
Authorized Person

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
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-2069

September 27, 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: **Sunrise Wind, LLC**; Docket No. BOEM-2021-0052
CRMC File 2021-09-036

Dear Ms. Lefton and Mr. Bennett,

Pursuant to 15 C.F.R. § 930.76, Sunrise Wind, LLC on September 1, 2021 filed with the Rhode Island Coastal Resources Management Council ("CRMC") a federal consistency certification for the proposed construction and operation of the Sunrise Wind offshore wind renewable energy project consisting of up to 94 wind turbine generators[1] (WTGs) at 102 potential locations and an export cable that will make landfall at Brookhaven, Long Island, New York. The Sunrise Wind project is contracted with New York State Energy Research & Development to deliver 880 megawatts (MW) and up to 924 MW of offshore wind-generated electricity under a 25-year Offshore Wind Renewable Energy Certificate Agreement executed in 2019. The Sunrise Wind Construction and Operation Plan describes the project as having an operating capacity ranging between 924 and 1,122 MW.

The proposed Sunrise Wind project is a listed activity subject to CRMC federal consistency review 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.

[1] Following the Sunrise Wind consistency certification filing with the CRMC, the project was modified to reduce the overall number of WTGs from a maximum of 122 to 94 at 102 potential locations in the revised April 8, 2022 Construction and Operation Plan.

The CRMC's CZMA six-month review period for the Sunrise Wind project began on October 28, 2021.[2] The most recent stay agreement between Sunrise Wind and the CRMC was executed on December 10, 2021 and provided for the State's CZMA decision date on or before March 2, 2023. In the interim, BOEM now anticipates issuing a Notice of Availability for the Draft Environmental Impact Statement (DEIS) on or about December 16, 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.[3] As such, the CRMC and Sunrise Wind, LLC have mutually have agreed to an amended stay of the the CRMC CZMA six-month federal consistency review period as specified in the attached stay agreement executed on September 27, 2022. **Pursuant to the agreement, the CRMC federal consistency decision in this matter is now due no later than April 27, 2023.**

The purpose of this letter is to notify the Bureau of Ocean Energy Management of this stay agreement between the parties pursuant to the requirements of 15 C.F.R. § 930.60(b). In addition, the CRMC requests BOEM not to issue a license or permit to Sunrise 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 Mike Evans, Project Manager, Sunrise Wind, LLC
David Kaiser. NOAA
Allison Castellan, NOAA
Anthony DeSisto, Esq., CRMC Legal Counsel

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[2] The CRMC notified BOEM and Sunrise Wind in a letter dated October 28, 2021 that commencement of the CRMC CZMA consistency review for the Sunrise Wind project began on October 28, 2021.
[3] The NOI for the DEIS for Sunrise Wind was previously scheduled to be release by BOEM on or about October 21, 2022.

State of Rhode Island
Coastal Resources Management Council
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AMENDED AGREEMENT TO STAY SIX-MONTH REVIEW PERIOD

Between

Rhode Island Coastal Resources Management Council

And

Sunrise Wind, LLC

The Rhode Island Coastal Resources Management Council, hereinafter referred to as the "CRMC," and Sunrise Wind, LLC[1] hereinafter referred to as "Sunrise Wind," hereby agree as follows.

Pursuant to 15 CFR § 930.76, Sunrise Wind filed a federal consistency certification with the CRMC on September 1, 2021 for the proposed construction and operation of a wind energy project on the outer continental shelf (OCS), known as Sunrise Wind, consisting of up to 94 wind turbine generators[2] (WTGs) at 102 potential locations and an export cable that will make landfall at Brookhaven, Long Island, New York. The Sunrise Wind project has been assigned CRMC File 2021-09-036 and is identified on the Federal docket as BOEM-2021-0052. The proposed wind turbine generators will be located within BOEM Lease Area OCS-A 0487 and approximately 16.7 mi (14.5 nm, 26.8 km) southeast from Block Island, Rhode Island. The proposed Sunrise Wind project is a listed activity 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] Sunrise Wind, LLC is a 50/50 joint venture between Orsted North America Inc. and Eversource Investment LLC.
[2] Following the Sunrise Wind consistency certification filing with the CRMC, the project was modified to reduce the overall number of WTGs from a maximum of 122 to 94 at 102 potential locations in the revised April 8, 2022 Construction and Operation Plan.

The most recent stay agreement between Sunrise Wind and the CRMC was executed on December 10, 2021 and provided for the State's CZMA decision date on or before March 2, 2023. In the interim, BOEM now anticipates issuing a Notice of Availability for the Draft Environmental Impact Statement (DEIS) on or about December 16, 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.[3] And, according to the CRMC, the 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.

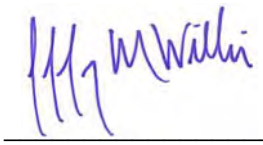
In accordance with 15 CFR § 930.60(b), and in consideration of the parties' mutual interest that the State have additional time to fully assess the proposed Sunrise Wind project consistency with the State's enforceable policies, the CRMC and Sunrise Wind mutually agree to the following dates and to stay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

- Date the CRMC 6-month review period commenced: October 28, 2021
- Date the 6-month review period was to end: April 28, 2022
- Date during the 6-month review period that the stay begins: December 15, 2021
- Date that the stay ends: December 16, 2022
  (132 days remaining in the 6-month review period)
- Date the 6-month review period ends and
  the CRMC consistency decision is due: April 27, 2023

The CRMC will issue its federal consistency decision on or before **April 27, 2023** unless Sunrise 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 27, 2023.

[3] The NOI for the DEIS for Sunrise Wind was previously scheduled to be release by BOEM on or about October 21, 2022.

This agreement made and entered by:

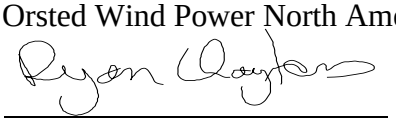


9/27/2022

Jeffrey M. Willis
Executive Director, CRMC

Date

Sunrise Wind LLC,
by its agent,
Orsted Wind Power North America LLC



9/20/2022

Ryan Chaytors,
Authorized Person

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
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-2069

December 13, 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: **Sunrise Wind, LLC**; Docket No. BOEM-2021-0052
CRMC File 2021-09-036

Dear Ms. Lefton and Mr. Bennett,

Pursuant to 15 C.F.R. § 930.76, Sunrise Wind, LLC on September 1, 2021 filed with the Rhode Island Coastal Resources Management Council ("CRMC") a federal consistency certification for the proposed construction and operation of the Sunrise Wind offshore wind renewable energy project consisting of up to 102 wind turbine generators[1] and an export cable that will make landfall at Brookhaven, Long Island, New York. The Sunrise Wind project is contracted with New York State Energy Research & Development to deliver 880 megawatts (MW) and up to 924 MW of offshore wind-generated electricity under a 25-year Offshore Wind Renewable Energy Certificate Agreement executed in 2019. The Sunrise Wind Construction and Operation Plan describes the project as having an operating capacity ranging between 924 and 1,122 MW.

The proposed Sunrise Wind project is a listed activity subject to CRMC federal consistency review 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's CZMA six-month review period for

[1] Following the Sunrise Wind consistency certification filing with the CRMC, the project was modified to reduce the overall number of WTGs from a maximum of 122 to 102 in the revised October 29, 2021 Construction and Operation Plan.

the Sunrise Wind project began on October 28, 2021[2]. The CRMC and Sunrise 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 on December 10, 2021. **Pursuant to the agreement, the CRMC federal consistency decision in this matter is now due no later than March 2, 2023.**

The purpose of this letter is to notify the Bureau of Ocean Energy Management of this stay agreement between the parties pursuant to the requirements of 15 C.F.R. § 930.60(b). In addition, the CRMC requests BOEM not to issue a license or permit to Sunrise 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 Mike Evans, Project Manager, Sunrise Wind, LLC
David Kaiser. NOAA
Allison Castellan, NOAA
CRMC Members
Anthony DeSisto, Esq., CRMC Legal Counsel

[2] The CRMC notified BOEM and Sunrise Wind in a letter dated October 28, 2021 that commencement of the CRMC CZMA consistency review for the Sunrise Wind project began on October 28, 2021.

State of Rhode Island
Coastal Resources Management Council
Oliver H. Stedman Government Center
4808 Tower Hill Road, Suite 116
Wakefield, RI 02879-1900

(401) 783-3370
Fax (401) 783-3767

AGREEMENT TO STAY SIX-MONTH REVIEW PERIOD

Between

Rhode Island Coastal Resources Management Council

And

Sunrise Wind, LLC

The Rhode Island Coastal Resources Management Council, hereinafter referred to as the "CRMC," and Sunrise Wind, LLC[1] hereinafter referred to as "Sunrise Wind," hereby agree as follows.

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The CRMC's CZMA six-month review period for the Sunrise Wind project began on October 28, 2021[3]. The Sunrise Wind Construction and Operation Plan (COP) identifies in Table 1.4-1 that the CRMC federal consistency decision for the project is anticipated between Q3 and Q4 2022. The Sunrise Wind COP at Section 3.2.2 assumes that all permits will be obtained by Q3 2023. BOEM anticipates issuing a Notice of Availability for the Draft Environmental Impact Statement (DEIS) on or about October 21, 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, according to CRMC, 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.

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[3] The CRMC notified BOEM and Sunrise Wind in a letter dated October 28, 2021 that commencement of the CRMC CZMA consistency review for the Sunrise Wind project began on October 28, 2021.

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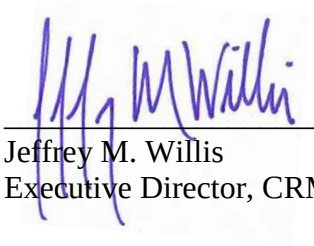
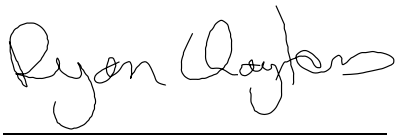


Jeffrey M. Willis
Executive Director, CRMC

10 December 2021
Date

Sunrise Wind LLC,
by its agent,
Orsted Wind Power North America LLC



Ryan Chaytors,
Authorized Person

10 December 2021
Date

cc BOEM
NOAA OCM
CRMC Council members

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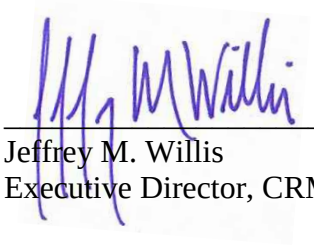

Jeffrey M. Willis
Executive Director, CRMC

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Sunrise Wind LLC,
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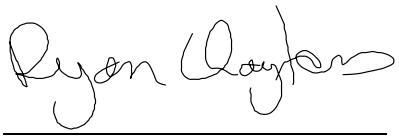

Ryan Chaytors,
Authorized Person

10 December 2021
Date

cc BOEM
NOAA OCM
CRMC Council members

Appendix 4 – WHOI Draft Baseline Report & Exposure Report

Baseline Fishery Landings in Rhode Island from the Sunrise Wind Lease Area and Export Cable Route

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

DRAFT

11 October 2022

Table of Contents

List of Figures

List of Tables

List of Abbreviations

COP – Construction and Operations Plan

ECC – Export Cable Corridor

ECR – Export Cable Route

ECRA – Export Cable Route Area

GDP – Gross Domestic Product

MA DMF – Massachusetts Division of Marine Fisheries

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

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 Sunrise Wind Lease Area to be $2.34 million (2020$), or $5,429/km^2/year. Of this, $1.16 million is landed in Rhode Island. Including indirect and induced effects, these landings generate average annual economic impacts of $2.49 million in Rhode Island.

We estimate the average annual value of commercial landings from the 180 m wide Sunrise Wind Export Cable Corridor to be $149,000, or $5,626/km^2/year. Of this, $23,000 is landed in Rhode Island. These landings generate estimated total annual economic impacts of $50,000 in Rhode Island.

We estimate the average annual economic impact from Rhode Island-based for-hire charter fishing in the Sunrise Wind Lease Area to be between $17,000 and $27,000, between $135,000 and $218,000 from charter fishing around the Sunrise Wind Export Cable route, and between $79,000 and $128,000 from charter fishing in the vicinity of the Wind Lease Area that is to be developed. (Note that some of these areas overlap.)

There is considerable variability in the baseline data of landings and landed value from the Sunrise Wind lease area and export cable corridor. Baseline future landings will vary due to natural and fisheries-related fluctuations in stocks and prices.

Introduction

This report estimates the level of pre-development fishing operations intersecting with, and landings and landed value from, the Sunrise Wind Lease Area (WLA) and Export Cable Corridor (ECC) (Figure 1) associated with landings in Rhode Island ports. Sunrise Wind LLC is a joint venture between Ørsted and Eversource.

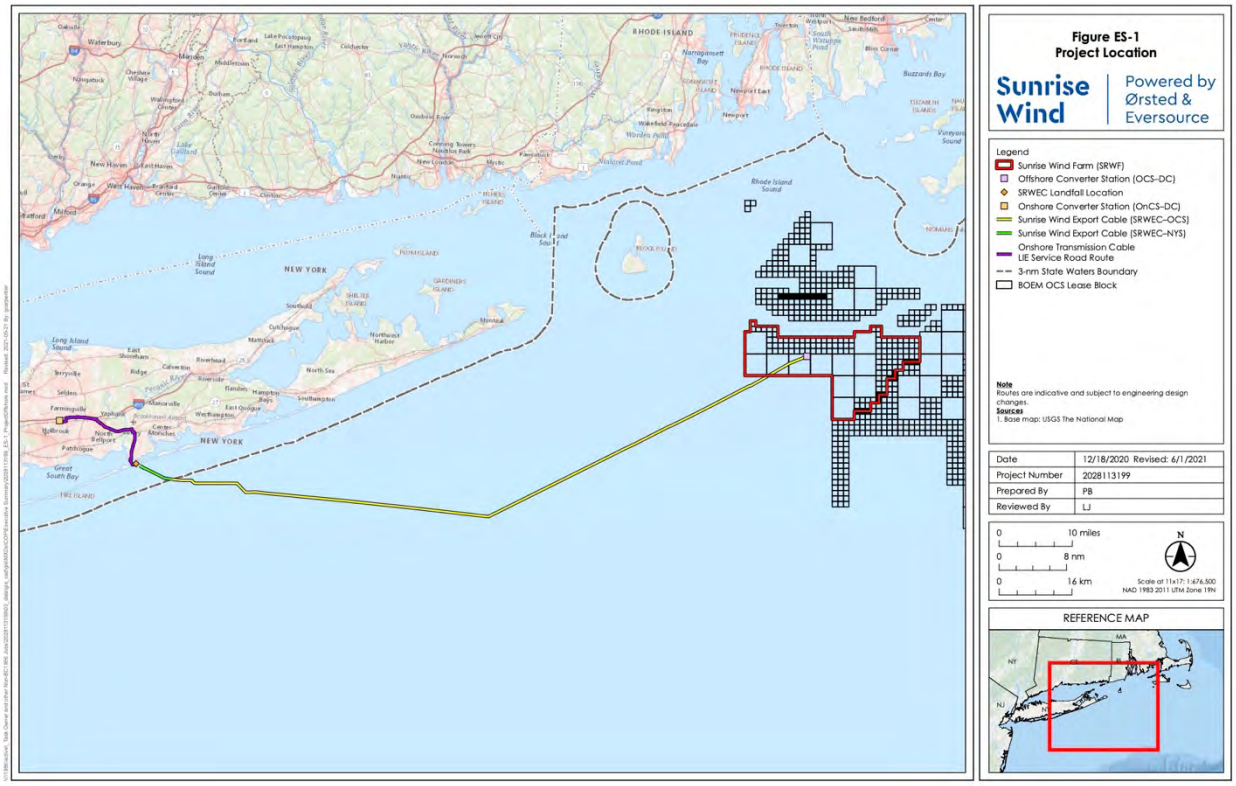

Figure 1. Sunrise Wind Lease Area and Export Cable Route. Source: Sunrise Wind.

The WLA for Sunrise Wind lies in federal waters, some 40 km south of the mainland coast near the border between Rhode Island and Massachusetts, and has a footprint of 430.6 km^2.[1] The Export Cable Route (ECR) is 147 km in length, and runs from the edge of the WLA first toward the southwest and then west toward Fire Island off the coast of Long Island, New York, to the export cable landing location near the western end of Fire Island. (Note that the ECR is slightly longer than the ECC, because the cable route includes sections within the WLA and inland of the landing point.)

To estimate commercial fish landings along the ECC, we define a 10km wide Export Cable Route Area (ECRA) extending 5km on either side of the cable route. The 10km wide ECRA has no physical significance in the context of the Sunrise Wind Lease, and is defined only for the purpose of identifying

[1] A small piece in the northeast corner of the original Sunrise WLA is not under consideration for turbine tower placement, and is not included in the WLA shapefile used for this analysis.

fisheries landings data that reflect what may be landed from fishing along the ECC. The ECC is defined as the narrow, 180m wide corridor centered on the ECR within which the seafloor may be disturbed in the process of clearing the cable route and burying the cable.

Table 1 shows the approximate length and area of these features for the Sunrise export cable route. In the sections that follow, fishery landings and values for the export cable route are estimated and reported for the ECC, as defined above.

Table 1. Sunrise Wind area parameters

Wind Lease Area footprint (km2)	430.6
Export cable route length (km)	147
Area of 10km Export Cable Route Area (ECRA) (km^2)	1,610.9
Area of Export Cable Corridor (ECC) (km^2)	26.5
Export Cable Corridor fraction of ECRA	1.64%

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.[2] 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. To gauge landings value and quantity at the spatial scale required for the Sunrise Wind Lease Area and export cable route, NOAA has recently 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 Sunrise Wind Lease Area (WLA) or its Export Cable Route Area (ECRA), from 2008 to 2019 (calendar years). Modeled representations of federal Vessel Trip Report (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

[2] 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.

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, 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 = standard deviation divided by 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 Rhode Island vessels, the observer program covered around 8% of trips with trawl gear and around 3% 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 Export Cable Corridor (ECC) 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 did 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." Note also:

- 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, bluefish).

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

Commercial Fishery Landings from Wind Energy and Export Cable Route Areas

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

The average annual landings from the Sunrise WLA are about 2.19 million lbs (standard deviation 855,000 lbs) with a value of about $2.12 million (standard deviation $737,000). Average annual landings from the ECC are about 102,000 lbs (standard deviation 31,000 lbs) with a value of $146,000 (standard deviation $50,000).

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

	Mean		***Standard Deviation***	
Area	**Value/year** (2020 $)	**Landings/year** (lbs)	**Value/year** (2020 $)	**Landings/year** (lbs)
Sunrise WLA	2,116,815	2,191,599	736,846	855,072
Sunrise ECC	146,040	102,423	50,083	31,388

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

Table 4 summarizes the average annual landings and value of fisheries production from the Sunrise WLA and the 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 Sunrise WLA during the 2008-2019 time period.

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

Area	Sunrise WLA		Sunrise ECC	
Year	Value (2020 $)	Landings (lbs)	Value (2020 $)	Landings (lbs)
2008	1,615,088	1,005,003	99,660	124,213
2009	1,774,968	1,763,708	116,648	141,792
2010	1,732,042	1,569,026	147,042	93,643
2011	2,068,388	2,138,106	183,873	121,945
2012	2,370,211	2,523,020	177,409	133,283
2013	3,660,640	3,846,497	193,497	110,854
2014	2,880,896	3,179,394	215,344	100,489
2015	2,100,812	2,099,179	112,582	123,345
2016	2,818,797	3,123,434	141,753	108,395
2017	2,011,618	2,091,922	206,015	64,818
2018	1,482,612	1,890,508	106,437	70,247
2019	885,704	1,069,387	52,223	36,059

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

	Mean		*Standard Deviation*	
Area/Species	Value/year (2020 $)	Landings/year (lbs)	Value/year (2020 $)	Landings/year (lbs)
Sunrise WLA				
ALL_OTHERS	559,908	712,732	526,411	603,320
Monkfish	377,837	224,763	134,917	39,911
Scallops/Bushel	243,724	21,375	180,466	16,581
Skate Wings	192,400	496,211	88,291	133,949
Lobster, American	131,173	23,676	34,047	6,421
Sunrise ECC				
Scallops/Bushel	62,591	5,704	45,989	4,658
ALL_OTHERS	17,814	21,860	17,907	21,597
Quahogs/Bushel	13,528	16,670	21,151	25,726
Monkfish	13,401	7,083	5,392	1,733
Squid/Loligo	11,494	8,877	4,379	3,925

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, dredge for 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. Sinking gillnets and bottom trawls are the most significant in the WLA, followed by scallop dredges. In the ECC, bottom trawls and scallop dredges are the most significant, followed by sinking gillnets and clam 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 Sunrise WLA by gear type.

	Mean		***Standard Deviation***	
Gear	**Value/year** (2020 $)	**Landings/year** (lbs)	**Value/year** (2020 $)	**Landings/year** (lbs)
ALL_OTHERS	608,138	720,798	514,302	601,202
Dredge - Clam	-	-	-	-
Dredge - Scallop	198,211	18,120	139,265	14,111
Gillnet – Other	-	-	-	-
Gillnet – Sink	550,603	563,390	210,752	193,006
Handline	3,387	917	4,821	1,122
Longline – Bottom	621	166	1,502	393
OTHER	7,764	691	26,896	2,394
Pot – Other	178,766	71,766	42,041	24,967
Trawl – Bottom	553,197	695,988	309,568	329,261
Trawl - Midwater	16,129	119,762	22,843	167,438

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

	Mean		***Standard Deviation***	
Gear	**Value/year** (2020 $)	**Landings/year** (lbs)	**Value/year** (2020 $)	**Landings/year** (lbs)
ALL_OTHERS	19,559	22,229	18,779	21,493
Dredge – Clam	13,897	16,872	20,984	25,656
Dredge – Scallop	57,149	5,238	41,824	4,275
Gillnet – Other	5	3	19	12
Gillnet – Sink	15,863	11,942	5,969	3,425
Handline	206	89	124	58
Longline - Bottom	45	12	102	27
OTHER	1,794	166	2,311	210
Pot - Other	3,581	2,040	1,053	541
Trawl – Bottom	31,799	28,050	7,171	5,388
Trawl - Midwater	2,143	15,782	1,998	14,316

Table 6 summarizes annual landings and landed value for the major ports receiving landings from the two areas. Point Judith (Rhode Island) and New Bedford (Massachusetts) are the most significant ports

for landings from the Sunrise 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 68% 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.

	Mean		***Standard Deviation***	
Area/Port	**Value/year** (2020 $)	**Landings/year** (lbs)	**Value/year** (2020 $)	**Landings/year** (lbs)
Sunrise WLA				
New Bedford, MA	875,504	887,422	548,737	669,281
Point Judith, RI	546,080	525,298	262,657	338,703
Little Compton, RI	226,334	259,258	107,800	134,413
Newport, RI	138,952	181,915	68,718	91,330
Sunrise ECC				
New Bedford, MA	75,390	50,137	32,864	22,755
Point Judith, RI	15,923	12,784	6,679	2,777

Table 7a. Average annual landings in Sunrise WLA by state.

	Mean		***Standard Deviation***	
State	**Value/year** (2020 $)	**Landings/year** (lbs)	**Value/year** (2020 $)	**Landings/year** (lbs)
Rhode Island	1,034,863	1,124,470	267,459	277,149
Massachusetts	981,602	1,002,341	551,935	695,103
Others	99,838	64,361	--	--

Table 7b. Average annual landings in Sunrise ECC by state.

	Mean		***Standard Deviation***	
State	**Value/year** (2020 $)	**Landings/year** (lbs)	**Value/year** (2020 $)	**Landings/year** (lbs)
Rhode Island	22,218	19,853	8,703	3,996
Massachusetts	77,407	54,210	33,681	26,059
Others	46,394	28,347	--	--

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$, 2014-2019 (2020$).

Month	Sunrise WLA	Sunrise ECC
Jan	181,533	15,225
Feb	108,563	15,810
Mar	111,095	19,200
Apr	161,159	25,643
May	165,798	23,047
Jun	237,018	42,712
Jul	170,048	41,095
Aug	144,073	23,846
Sep	224,291	20,819
Oct	163,778	17,847
Nov	191,969	15,994
Dec	190,477	20,273

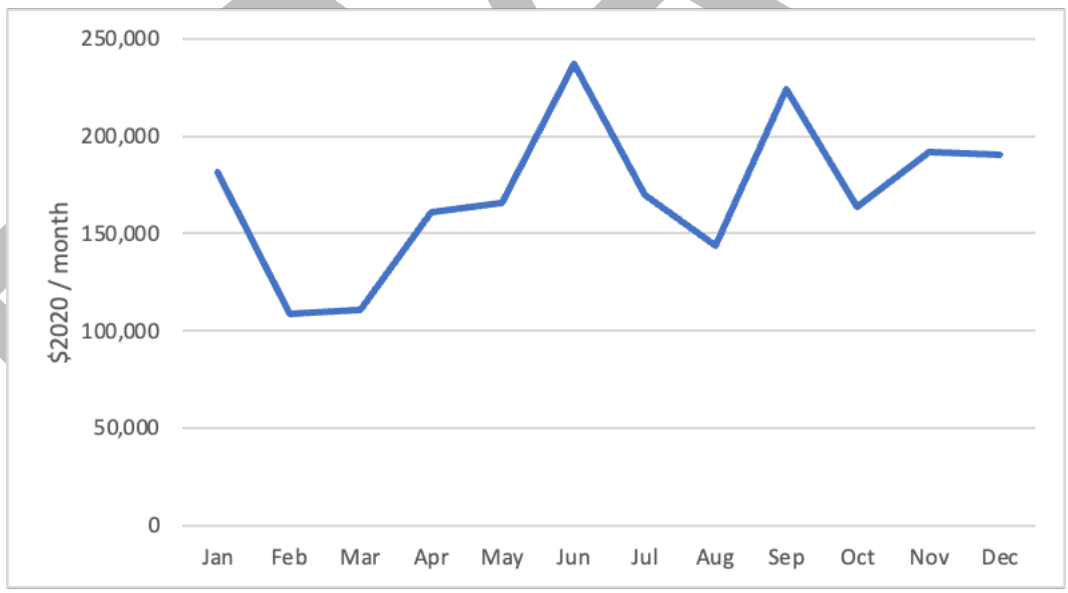

Figure 2. Average monthly value of landings, Sunrise WLA, 2014-2019.

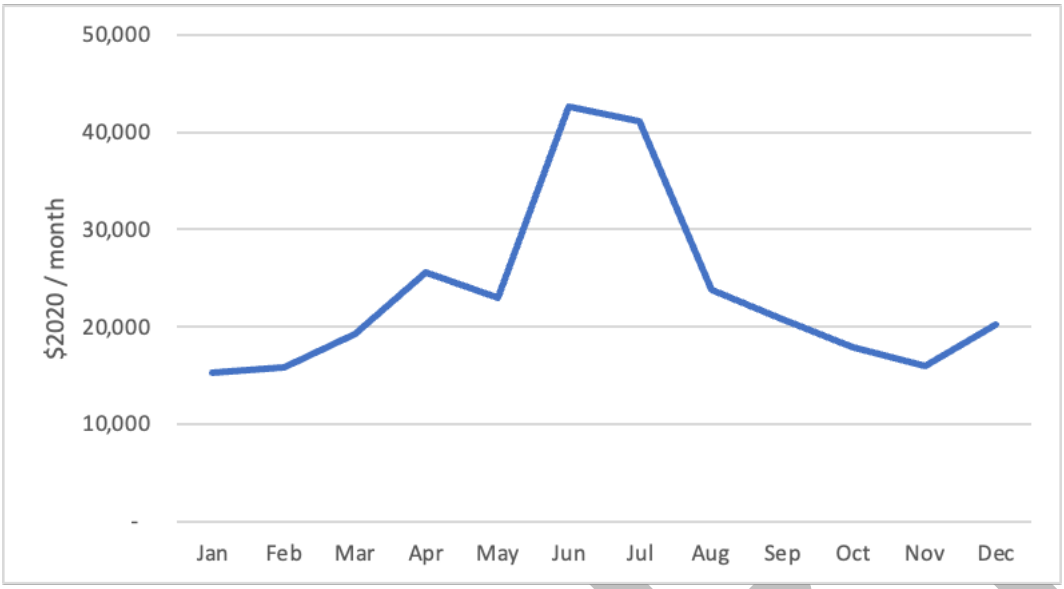

Figure 3. Average monthly value of landings, Sunrise ECC, 2014-2019.

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

Month	Sunrise WLA	Sunrise ECRA
Jan	315	480
Feb	167	323
Mar	149	305
Apr	208	452
May	367	732
Jun	502	923
Jul	575	789
Aug	579	705
Sep	501	677
Oct	380	589
Nov	335	588
Dec	365	646

Inter-annual price adjustments

We use the Bureau of Labor Statistics' Producer Price Index (PPI) for "unprocessed and prepared seafood"[3] 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

[3] https://www.bls.gov/ppi/#data

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) deflator[4] 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.

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%

[4] https://apps.bea.gov/iTable/iTable.cfm?reqid=19&step=2#reqid=19&step=2&isuri=1&1921=survey

Adjustment of lobster and Jonah crab data

As noted above, lobster vessels that carry only lobster permits are not subject to a Vessel Trip Report (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 2[5] encompasses the waters south of Rhode Island and Cape Cod to a distance of about 40 nm, and includes the Sunrise WLA.) We assume conservatively that landings from 60% of the lobster vessels in the Sunrise 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 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 12.6% 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$)	**Sunrise WLA**	**Sunrise ECC**
Avg. VTR total $/year (Table 2)	2,116,815	146,040
Avg. VTR lobster $/year (Tables A1-A3)	131,173	1,963
Avg. VTR Jonah crab $/year (Tables A1-A3)	35,412	1,159
% of total captured by VTR	40%	40%
Adjusted lobster $/year	351,981	5,019
Adjusted Jonah crab $/year	95,022	2,964
Net increase over VTR $/year (row 5+6-2-3)	280,419	4,861
Adjusted total $/year	2,337,623	149,096
Adjusted increase over VTR total value	13.2%	3.3%

[5] http://fisheries.noaa.gov/resource/map/lobster-management-areas

With all adjustments, we estimate the average annual landed value in Rhode Island from the Sunrise WLA to be about $1.16 million (2020$), and from the Sunrise ECC about $23,000.

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 user 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 inducted 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 Sunrise WLA to be about $2.49 million in Rhode Island (Table 12). We also estimate the average annual total economic impact from commercial fishing activity in the Sunrise ECC to be about $50,000 in Rhode Island. Including landings in other states, the total average annual economic impact from commercial

fishing activity in the WLA is $5.04 million and in the ECC it is $324,000. 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$)

		Average value of landings/year			Total impact/year
Area	**State**	VTR data only (Table 11, row 1)	with lobster & Jonah crab adjustment	with dockside sales adjustment (15% premium on RI lobster & JC landings)	"dockside sales" column multiplied by upstream & downstream multipliers, except RI lobster & JC
Sunrise WLA	total	2,116,815	2,313,575	2,337,623	5,044,012
Sunrise ECC	total	146,040	148,985	149,096	323,848
Sunrise WLA	RI	1,034,911	1,131,107	1,155,156	2,493,412
Sunrise ECC	RI	22,213	22,661	22,773	50,207

Rhode Island-based charter fishing

To obtain data on for-hire charter fishing activity in the Sunrise Wind Lease Area (WLA) and Export Cable Corridor (ECC), 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 4. 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 13). 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 4, 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 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.

Table 13. 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

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. Tables 14 and 15 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 shown in Figure 4. (The WTGA analysis is based on a WTGA shapefile received from INSPIRE Environmental in November 2020, and reflects the turbine tower layout planned for Sunrise Wind at that time. This layout may change.) Note that some of the trips shown for the ECRA (Table 15) are also included in the numbers for the WTGA + 5km buffer (Table 14).

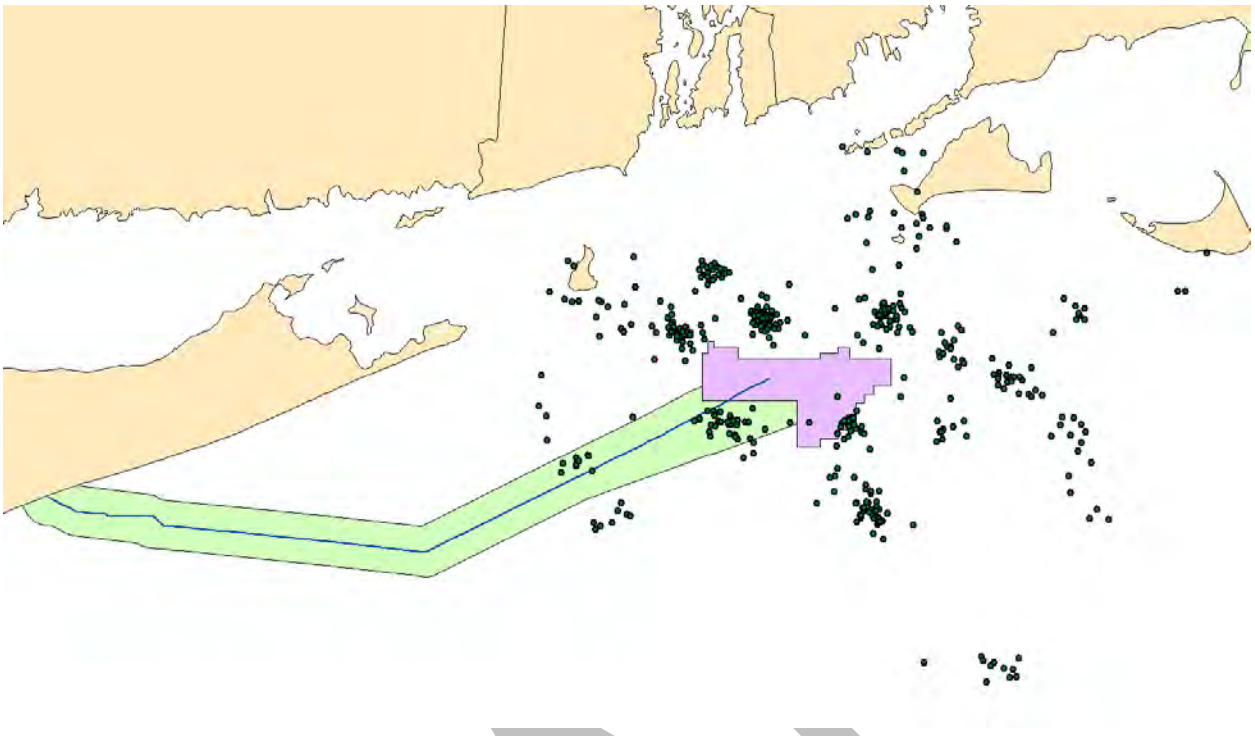

Figure 4. Charter fishing locations, 2017-2021, identified in survey responses. WLA is shown in purple, ECRA in green, and ECR in blue.

Table 14. Number of Rhode Island-based vessel trips and anglers by year, Sunrise WLA.

Year	WLA		WTGA + 5km buffer	
	Vessel Trips	Anglers	Vessel Trips	Anglers
2017	20	120	45	270
2018	12	70	49.5	281
2019	0	0	21	120
2020	5	10	34	184
2021	1	6	25	131
Average	**7.6**	**41.2**	**34.9**	**197.2**

Table 15. Number of Rhode Island-based vessel trips and anglers by year, Sunrise ECRA.

Year	Vessel Trips	Anglers
2017	43	244
2018	49.5	295
2019	70	417
2020	58	344
2021	72	381
Average	**58.5**	**336.2**

We use the revenue per angler estimates from NOAA shown in the Table 16 below 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 16 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$ ($104.94) to 2020$ ($106.15) using the GDP implicit price deflator (2019: 112.3; 2020: 113.6).

Table 16. Sunrise Wind area for-hire vessel revenue from NOAA VTR data. Source: NOAA (2021).

Year	Revenue per angler (2019$)
2008	87.52
2009	99.36
2010	111.48
2011	122.56
2012	116.79
2013	112.68
2014	109.76
2015	106.30
2016	101.74
2017	100.42
2018	85.71
Average	**104.94**

The annual revenue for each area is estimated by multiplying the number of anglers (Tables 14 and 15) by the average revenue per angler ($106.15). 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 17.

Table 17. Annual revenue and economic impact from RI-based charter fishing in Sunrise Wind areas.

Area	**Annual anglers**	**Revenue per angler** (2020$)	**Scale factor**	**Annual revenue** (2020$)	**Impact multiplier**	**Annual impact** (2020$)
WLA	41.2	106.15	Low: 2.333	10,205	1.622	16,552
			High: 3.763	16,459	1.622	26,696
WTGA+5km	197.2	106.15	Low: 2.333	48,843	1.622	79,224
			High: 3.763	78,779	1.622	127,780
ECRA	336.2	106.15	Low: 2.333	83,271	1.622	135,066
			High: 3.763	134,308	1.622	217,848

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Appendix

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

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

Species	*Mean* Value/year (2020 $)	*Mean* Landings/year (lbs)	*Standard Deviation* Value/year (2020 $)	*Standard Deviation* Landings/year (lbs)
ALL_OTHERS	559,908	712,732	526,411	603,320
AMBERJACK, SPECIES NOT SPECIFIED	0	0	0	0
BLACK BELLIED ROSEFISH	0	0	0	0
BLACK SEA BASS	12,222	2,786	6,385	1,733
BLUEFISH	3,407	4,536	1,962	2,436
BONITO	291	90	476	133
BUTTERFISH	17,038	22,772	18,509	25,517
CLAM, SURF/BUSHEL	0	0	0	0
COBIA	0	0	0	0
COD	41,370	13,863	24,423	8,494
CRAB, BLUE/BUSHEL	18	15	42	36
CRAB, CANCER	0	0	0	0
CRAB, HORSESHOE	0	0	0	0
CRAB, JONAH	35,412	41,332	21,818	22,824
CRAB, ROCK/BUSHEL	2,792	4,117	3,206	4,660
CRAB, SPECIES NOT SPECIFIED	18	31	24	43
CREVALLE	0	0	0	0
CROAKER, ATLANTIC	86	189	174	425
CUNNER	730	156	1,471	255
CUSK	0	0	0	0
DOGFISH, SMOOTH	641	1,661	806	2,987
DOGFISH, SPINY	13,758	66,355	10,002	51,664
DOLPHIN FISH / MAHI-MAHI	0	0	1	1
DRUM, BLACK	0	0	0	0
EEL, AMERICAN	9	10	11	13
EEL, CONGER	215	305	304	405
EEL, SPECIES NOT SPECIFIED	17	19	16	15
FLOUNDER, AMERICAN PLAICE /DAB	306	130	747	320
FLOUNDER, FOURSPOT	20	37	30	64
FLOUNDER, SAND-DAB / WINDOWPANE / BRILL	290	374	541	691
FLOUNDER, SOUTHERN	0	0	0	0
FLOUNDER, SUMMER / FLUKE	97,628	27,773	64,534	20,822
FLOUNDER, WINTER / BLACKBACK	55,691	19,842	61,694	21,164
FLOUNDER, WITCH / GRAY SOLE	296	109	238	83
FLOUNDER, YELLOWTAIL	57,000	28,950	60,324	36,530
FLOUNDER,NOT SPECIFIED	0	0	0	0
HADDOCK ROE	1,286	1,237	2,916	3,094
HAKE, OFFSHORE	266	350	743	976

HAKE, RED / LING	7,089	23,350	6,032	22,211
HAKE, SILVER / WHITING	64,298	106,558	51,011	96,799
HAKE, WHITE	790	532	1,679	1,205
HAKE,SPOTTED	0	0	1	1
HALIBUT, ATLANTIC	63	7	112	13
HARVEST FISH	0	0	0	0
HERRING, ATLANTIC	24,654	159,535	26,124	179,528
HERRING, BLUE BACK	0	0	0	0
JOHN DORY	97	74	107	78
LOBSTER, AMERICAN	131,173	23,676	34,047	6,421
MACKEREL, ATLANTIC	4,243	17,554	7,088	38,138
MACKEREL, CHUB	2	4	7	13
MACKEREL, KING	0	0	0	0
MACKEREL, SPANISH	2	1	6	2
MENHADEN	0	1	0	2
MONK	377,837	224,763	134,917	39,911
MULLETS	1	2	4	5
OCEAN POUT	26	20	73	59
OTHER FINFISH	0	1	0	1
PERCH, WHITE	0	0	0	0
POLLOCK	94	78	105	98
PUFFER, NORTHERN	0	0	0	0
QUAHOGS/BUSHEL	0	0	0	0
RED PORGY	0	0	0	0
REDFISH / OCEAN PERCH	3	2	8	6
SCALLOPS,BAY/SHELLS	1	0	4	0
SCALLOPS/BUSHEL	243,724	21,375	180,466	16,581
SCORPIONFISH	1	1	5	4
SCUP / PORGY	63,029	92,599	51,362	78,456
SEA RAVEN	153	104	272	197
SEA ROBINS	21	124	19	122
SEATROUT, SPECIES NOT SPECIFIED	13	24	18	37
SHAD, AMERICAN	0	0	1	1
SHAD, HICKORY	0	0	0	0
SHARK, SANDBAR	0	0	0	0
SHARK, THRESHER	4	4	13	14
SHEEPSHEAD	0	0	0	0
SKATE WINGS	192,400	496,211	88,291	133,949
SKATE WINGS, CLEARNOSE	5	13	16	44
SPOT	1	4	5	13
SQUID / ILLEX	2,347	2,454	6,605	5,293
SQUID / LOLIGO	92,798	70,056	92,364	71,383
STARGAZER,NORTHERN	0	0	0	0
STRIPED BASS	3,238	677	2,335	483
SWORDFISH	0	0	0	0
TAUTOG	795	212	606	159
TILEFISH	0	0	0	0
TILEFISH, BLUELINE	3	1	4	1

TILEFISH, GOLDEN	1,963	518	1,659	404
TILEFISH, SAND	0	0	0	0
TRIGGERFISH	28	16	34	18
TUNA, ALBACORE	48	64	158	209
TUNA, LITTLE	63	74	155	163
TUNA, SKIPJACK	0	0	0	0
WEAKFISH	405	189	424	189
WHELK, CHANNELED/BUSHEL	4,157	522	7,792	974
WHELK, KNOBBED/BUSHEL	8	3	18	10
WHELK, LIGHTNING	0	0	0	0
WHELK,WAVED	0	0	0	0
WHITING, KING / KINGFISH	420	372	666	584
WOLFFISH / OCEAN CATFISH	0	0	0	0

Table A2. Average annual landings by species from the Sunrise 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.)

	Mean		***Standard Deviation***	
Species	**Value/year** (2020 $)	**Landings/year** (lbs)	**Value/year** (2020 $)	**Landings/year** (lbs)
ALL_OTHERS	1,086,214	1,332,928	1,091,900	1,316,866
AMBERJACK, SPECIES NOT SPECIFIED	0	0	0	0
BLACK BELLIED ROSEFISH	0	0	1	1
BLACK SEA BASS	53,033	12,521	19,313	5,061
BLUEFISH	18,957	23,346	8,936	11,229
BONITO	1,050	412	1,533	595
BUTTERFISH	16,597	21,037	6,373	8,275
CLAM, SURF/BUSHEL	7,967	10,441	16,727	22,297
COBIA	26	8	43	12
COD	41,005	15,173	26,421	9,161
CRAB, BLUE/BUSHEL	147	117	340	270
CRAB, CANCER	0	0	0	0
CRAB, HORSESHOE	247	216	338	315
CRAB, JONAH	70,684	86,389	26,048	26,734
CRAB, ROCK/BUSHEL	4,138	6,237	4,594	6,911
CRAB, SPECIES NOT SPECIFIED	227	426	485	929
CREVALLE	1	1	2	2
CROAKER, ATLANTIC	457	653	1,003	1,212
CUNNER	551	162	615	152
CUSK	2	2	6	7
DOGFISH, SMOOTH	8,424	12,688	2,083	4,090
DOGFISH, SPINY	9,165	38,144	7,462	23,274
DOLPHIN FISH / MAHI-MAHI	3	1	7	2
DRUM, BLACK	0	0	1	1
EEL, AMERICAN	4,314	220	13,905	275
EEL, CONGER	1,384	1,409	1,333	1,355
EEL, SPECIES NOT SPECIFIED	1,271	1,124	1,436	1,092
FLOUNDER, AMERICAN PLAICE /DAB	234	106	372	164
FLOUNDER, FOURSPOT	271	522	198	432
FLOUNDER, SAND-DAB / WINDOWPANE / BRILL	1,685	1,943	2,831	3,254
FLOUNDER, SOUTHERN	9	3	32	9
FLOUNDER, SUMMER / FLUKE	447,054	130,148	115,523	47,087
FLOUNDER, WINTER / BLACKBACK	35,113	12,948	35,858	12,299
FLOUNDER, WITCH / GRAY SOLE	2,015	634	2,164	637
FLOUNDER, YELLOWTAIL	90,579	45,204	87,064	47,122
FLOUNDER,NOT SPECIFIED	8	4	25	11
HADDOCK ROE	1,635	1,668	5,262	5,517
HAKE, OFFSHORE	646	785	838	925

HAKE, RED / LING	9,314	18,667	3,458	7,883
HAKE, SILVER / WHITING	60,678	74,726	29,213	33,972
HAKE, WHITE	748	491	1,096	748
HAKE,SPOTTED	16	27	42	66
HALIBUT, ATLANTIC	86	11	107	15
HARVEST FISH	0	1	1	1
HERRING, ATLANTIC	148,770	1,050,510	115,439	863,625
HERRING, BLUE BACK	73	283	109	502
JOHN DORY	466	382	499	418
LOBSTER, AMERICAN	119,695	21,316	55,229	9,922
MACKEREL, ATLANTIC	31,534	135,262	49,179	243,327
MACKEREL, CHUB	299	419	1,009	1,391
MACKEREL, KING	1	0	3	1
MACKEREL, SPANISH	125	51	124	50
MENHADEN	870	7,225	1,154	9,986
MONK	817,138	431,906	328,751	105,659
MULLETS	33	38	51	64
OCEAN POUT	198	157	483	362
OTHER FINFISH	75	54	219	126
PERCH, WHITE	0	1	1	1
POLLOCK	245	245	609	687
PUFFER, NORTHERN	0	0	0	0
QUAHOGS/BUSHEL	824,865	1,016,461	1,289,689	1,568,629
RED PORGY	7	13	25	44
REDFISH / OCEAN PERCH	3	4	6	8
SCALLOPS,BAY/SHELLS	38	3	132	11
SCALLOPS/BUSHEL	3,816,495	347,782	2,804,183	283,996
SCORPIONFISH	5	14	15	34
SCUP / PORGY	170,198	213,291	47,097	80,257
SEA RAVEN	102	76	178	138
SEA ROBINS	172	754	74	309
SEATROUT, SPECIES NOT SPECIFIED	58	74	82	56
SHAD, AMERICAN	39	58	46	82
SHAD, HICKORY	7	8	23	27
SHARK, SANDBAR	1	0	2	1
SHARK, THRESHER	98	65	162	95
SHEEPSHEAD	0	1	1	1
SKATE WINGS	221,893	603,399	86,517	150,471
SKATE WINGS, CLEARNOSE	51	150	136	417
SPOT	125	161	257	383
SQUID / ILLEX	883	1,144	1,150	1,186
SQUID / LOLIGO	700,858	541,276	267,036	239,357
STARGAZER,NORTHERN	0	0	0	0
STRIPED BASS	49,469	11,721	18,535	4,349
SWORDFISH	12	3	21	4
TAUTOG	2,231	602	1,680	454
TILEFISH	0	0	1	0
TILEFISH, BLUELINE	24	12	26	14

TILEFISH, GOLDEN	7,544	1,997	6,374	1,770
TILEFISH, SAND	2	1	6	2
TRIGGERFISH	265	148	148	106
TUNA, ALBACORE	207	185	322	270
TUNA, LITTLE	388	520	364	575
TUNA, SKIPJACK	3	2	11	6
WEAKFISH	3,195	1,505	2,444	1,286
WHELK, CHANNELED/BUSHEL	2,079	430	2,291	376
WHELK, KNOBBED/BUSHEL	149	100	259	199
WHELK, LIGHTNING	55	21	152	55
WHELK,WAVED	503	707	1,210	1,670
WHITING, KING / KINGFISH	1,890	1,609	3,865	3,086
WOLFFISH / OCEAN CATFISH	0	0	0	0

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 (PANAEID)
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
GROUPER, OTHER
GROUPER, 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 Sunrise WLA by port.

Port	*Mean* Value/year (2020 $)	*Mean* Landings/year (lbs)	*Standard Deviation* Value/year (2020 $)	*Standard Deviation* Landings/year (lbs)
ALL_OTHERS	53,195	71,187	114,525	143,689
ATLANTIC CITY	0	0	0	0
BARNEGAT	0	0	0	0
BARNSTABLE	43	16	148	54
BEAUFORT	2,605	1,008	2,843	1,129
BELFORD	48	20	166	71
BOSTON	1,512	2,692	2,434	5,682
BRISTOL	0	0	0	0
CAPE MAY	903	419	1,692	1,081
CHATHAM	5,033	4,278	11,127	9,439
CHILMARK	4,785	973	7,195	1,565
CHINCOTEAGUE	57	20	198	68
DAVISVILLE	1,318	1,746	3,174	5,535
FAIRHAVEN	16,201	10,368	26,977	17,169
FALL RIVER	2,931	10,891	4,303	17,377
FALMOUTH	0	0	0	0
FREEPORT	0	0	0	0
GLOUCESTER	3,693	27,040	12,275	90,800
HAMPTON	6,389	3,140	11,196	6,034
HAMPTON BAY	28	21	67	53
HARWICHPORT	1,111	207	3,051	567
HYANNIS	0	0	0	0
ISLIP	0	0	0	0
JAMESTOWN	0	0	0	0
LITTLE COMPTON	226,334	259,258	107,800	134,413
LONG BEACH	0	0	0	0
MENEMSHA	5,425	957	10,326	1,659
MONTAUK	41,198	24,325	17,716	11,684
MOREHEAD CITY	0	0	0	0
MORICHES	0	0	0	0
NANTUCKET	0	0	0	0
NEW BEDFORD	875,504	887,422	548,737	669,281
NEW LONDON	7,504	8,638	7,769	9,456
NEW SHOREHAM	718	406	760	813
NEWPORT	138,952	181,915	68,718	91,330
NEWPORT NEWS	3,176	1,528	7,079	3,798
NORTH KINGSTOWN	0	0	0	0
OCEAN CITY	0	0	0	0
ORIENTAL	0	0	0	0
OTHER NASSAU	0	0	0	0
OTHER WASHINGTON(COUNTY)	0	0	0	0
POINT JUDITH	546,080	525,298	262,657	338,703

POINT LOOKOUT	0	0	0	0
POINT PLEASANT	3,422	1,664	4,334	2,086
SANDWICH	198	191	686	660
SHINNECOCK	262	254	790	780
STONINGTON	20,969	9,586	27,023	7,596
TIVERTON	38,976	48,182	54,191	63,536
VINEYARD HAVEN	0	0	0	0
WANCHESE	1,321	501	3,633	1,376
WESTPORT	48,050	35,531	25,949	31,021
WILDWOOD	0	0	0	0
WOODS HOLE	5,680	731	13,266	1,708

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

	Mean		***Standard Deviation***	
Port	**Value/year** (2020 $)	**Landings/year** (lbs)	**Value/year** (2020 $)	**Landings/year** (lbs)
ALL_OTHERS	143,117	176,898	191,660	245,183
ATLANTIC CITY	77,527	70,495	121,388	109,654
BARNEGAT	8,747	1,120	17,512	1,775
BARNSTABLE	0	0	0	0
BEAUFORT	17,715	6,051	21,168	6,382
BELFORD	7,339	3,311	16,143	7,042
BOSTON	855	971	1,400	1,483
BRISTOL	0	0	0	0
CAPE MAY	148,766	105,942	131,194	162,371
CHATHAM	382	231	897	619
CHILMARK	452	119	1,175	309
CHINCOTEAGUE	3,435	1,466	4,610	1,872
DAVISVILLE	13,160	5,945	33,605	16,782
FAIRHAVEN	59,094	7,831	86,941	11,476
FALL RIVER	8,662	41,781	13,879	75,814
FALMOUTH	0	0	0	0
FREEPORT	1,647	547	2,141	764
GLOUCESTER	17,206	103,963	36,986	216,104
HAMPTON	27,393	11,062	27,288	11,932
HAMPTON BAY	408,225	225,944	226,863	123,057
HARWICHPORT	243	26	841	90
HYANNIS	103	14	358	48
ISLIP	50	20	173	68
JAMESTOWN	0	0	0	0
LITTLE COMPTON	60,734	60,342	54,955	45,630
LONG BEACH	283	56	980	193
MENEMSHA	137	22	474	77
MONTAUK	619,147	338,770	191,638	82,674
MOREHEAD CITY	115	46	400	159
MORICHES	31,172	15,133	58,495	29,523
NANTUCKET	0	0	0	0

NEW BEDFORD	4,596,922	3,057,161	2,003,902	1,387,470
NEW LONDON	273,333	166,851	170,528	85,708
NEW SHOREHAM	5,998	4,614	12,427	10,998
NEWPORT	177,602	160,773	219,187	55,484
NEWPORT NEWS	40,413	7,714	42,981	7,040
NORTH KINGSTOWN	6,012	17,829	14,411	44,701
OCEAN CITY	1,644	428	3,216	808
ORIENTAL	339	142	813	334
OTHER NASSAU	123	120	425	414
OTHER WASHINGTON(COUNTY)	746	486	2,584	1,685
POINT JUDITH	970,922	779,532	407,242	169,347
POINT LOOKOUT	4,591	2,701	7,604	4,907
POINT PLEASANT	142,124	92,041	61,216	62,891
SANDWICH	0	0	0	0
SHINNECOCK	678,485	487,859	244,769	181,403
STONINGTON	165,057	66,856	90,279	34,459
TIVERTON	18,375	30,325	23,482	32,619
VINEYARD HAVEN	0	0	0	0
WANCHESE	2,741	1,040	4,033	1,463
WESTPORT	19,252	13,665	10,888	8,472
WILDWOOD	1,283	182	4,443	632
WOODS HOLE	106	16	366	54

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

Rhode Island Fisheries Exposure
from the Sunrise Wind Lease Area and the Sunrise Export Cable Route

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

10 August 2023

Table of Contents

List of Figures

List of Tables

List of Abbreviations

COP – Construction and Operations Plan

ECC – Export Cable Corridor

ECR – Export Cable Route

ECC WA – Export Cable Corridor Working Area

ECRA – Export Cable Route Area

GDP – Gross Domestic Product

MA DMF – Massachusetts Division of Marine Fisheries

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

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 Sunrise Wind Lease Area to be $2.40 million (2020$), or $5,567/km^2/year. Of this, $1.19 million is landed in Rhode Island. Including indirect and induced effects, these landings generate average annual economic impacts of $2.55 million in Rhode Island.

We estimate the average annual value of commercial landings from the 180 m wide Sunrise Wind Export Cable Corridor to be $151,000, or $5,694/km^2/year. Of this, $23,000 is landed in Rhode Island. These landings generate estimated total annual economic impacts of $51,000 in Rhode Island.

We estimate that a total (lump sum) of $2,883,000 (2020$) of commercial fisheries value landed in Rhode Island is potentially exposed to the Sunrise Wind Farm development. This accounts for about 48% of the total potentially exposed commercial landed value from Sunrise Wind. It includes about $2,088,000 in direct landed value forgone due to construction-related effects, $681,000 from forgone fishing during the wind farm's operation, and $113,000 in present value of landings from decommissioning. Including indirect and induced effects, the potentially affected commercial landings result in about $6,251,000 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 in and around the Sunrise Wind Lease Area to be between $317,000 and $511,000, and between $135,000 and $218,000 from charter fishing around the Sunrise Wind Export Cable route. (Note that these areas overlap to some extent.) We estimate that a total (lump sum) of about $718,000 (2020$) in economic impact from Rhode Island-based charter fishing is potentially exposed during construction and decommissioning activities at Sunrise Wind.

There is considerable variability in the baseline data of landings and landed value from the Sunrise 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 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 $6.97 million in economic impact to Rhode Island from Sunrise Wind development on commercial and charter fishing to be a conservative upper bound on likely actual impacts.

Introduction

This report estimates the level of pre-development fishing operations intersecting with, and landings and landed value from, the Sunrise Wind Lease Area (WLA) and Export Cable Corridor (ECC) (Figure 1) associated with landings and revenue generated in Rhode Island ports, and the potential exposure of Rhode Island-based commercial and for-hire charter fishing to Sunrise Wind Farm construction, operations, and decommissioning. Sunrise Wind LLC is a joint venture between Ørsted and Eversource.

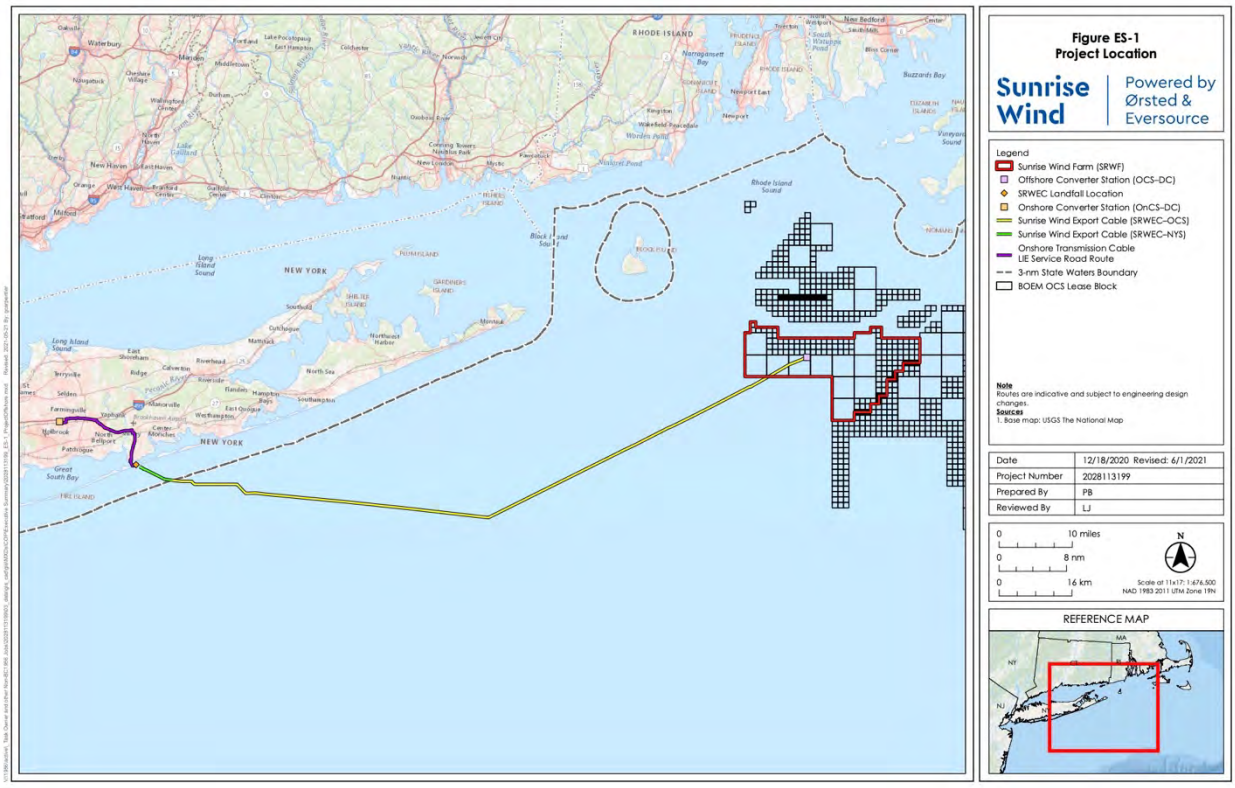

Figure 1. Sunrise Wind Lease Area and export cable route. Source: Sunrise Wind.

The WLA for Sunrise Wind lies in federal waters, some 40 km south of the mainland coast near the border between Rhode Island and Massachusetts, and has a footprint of 430.6 km^2.[1] The ECC is 147 km in length, and runs from the edge of the WLA first toward the southwest and then west toward Fire Island off the coast of Long Island, New York, to the export cable landing location near the western end of Fire Island. (Note that the export cable route is slightly longer than the ECC, because the cable route includes sections within the WLA and inland of the landing point.)

To estimate commercial fish landings along the ECC, we define a 10km wide Export Cable Route Area (ECRA) extending 5km on either side of the cable route. The 10km wide ECRA has no physical

[1] A small piece in the northeast corner of the original Sunrise WLA is not under consideration for turbine tower placement, and is not included in the WLA shapefile used for this analysis.

significance in the context of the Sunrise 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. Only portions of the narrow, 180m wide ECC centered on the export cable may be disturbed in the process of burying the cable.

Table 1 shows the approximate length and area of these features for the Sunrise export cable route. In the sections that follow, fishery landings and values for the export cable route are estimated and reported for the ECC, as defined above.

Table 1. Sunrise Wind area parameters

Wind Lease Area footprint (km2)	430.6
Export cable route length (km)	147
Area of 10km Export Cable Route Area (ECRA) (km^2)	1,610.9
Area of Export Cable Corridor (ECC) (km^2)	26.5
Export Cable Corridor fraction of ECRA	1.64%

Methodology

Our approach to estimating the potential impact of Sunrise Wind development on commercial fishing is to first estimate the annual landed weight and value of fish from the Sunrise 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 Sunrise Wind development.

We estimate the annual commercial landings and landed value of fish from the Sunrise WLA and ECC using a new 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 Sunrise 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 Sunrise 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 impacts on marine biota, habitats, and ecological function. The impacts 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 the two years since 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 (Hogan *et al.* 2023), we consider five categories of possible exposure for commercial fishing from the Sunrise 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 Sunrise 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 Sunrise 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.[2] 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. To gauge landings value and quantity at the spatial scale required for the Sunrise Wind Lease Area and export cable route, NOAA has recently 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 Sunrise Wind Lease Area (WLA) or its Export Cable Route Area (ECRA), from 2008 to 2019 (calendar years). Modeled representations of federal Vessel Trip Report (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, 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 = standard deviation divided by mean) of total discards for each species group were derived for different SBRM fleets covering different gears, access

[2] 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.

areas, states, and mesh sizes (NEFSC 2013). For Rhode Island vessels, the observer program covered around 8% of trips with trawl gear and around 3% 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 Export Cable Corridor (ECC) 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 did 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." Note also:

- 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, bluefish).

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

Commercial Fishery Landings from Wind Energy and Export Cable Route Areas

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

The average annual landings from the Sunrise WLA are about 2.19 million lbs (standard deviation 855,000 lbs) with a value of about $2.12 million (standard deviation $737,000). Average annual landings from the ECC are about 102,000 lbs (standard deviation 31,000 lbs) with a value of $146,000 (standard deviation $50,000).

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

	Mean		***Standard Deviation***	
Area	**Value/year** (2020 $)	**Landings/year** (lbs)	**Value/year** (2020 $)	**Landings/year** (lbs)
Sunrise WLA	2,116,815	2,191,599	736,846	855,072
Sunrise ECC	146,040	102,423	50,083	31,388

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

Table 4 summarizes the average annual landings and value of fisheries production from the Sunrise WLA and the 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 Sunrise WLA during the 2008-2019 time period.

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

Area	**Sunrise WLA**		**Sunrise ECC**	
Year	**Value** (2020 $)	**Landings** (lbs)	**Value** (2020 $)	**Landings** (lbs)
2008	1,615,088	1,005,003	99,660	124,213
2009	1,774,968	1,763,708	116,648	141,792
2010	1,732,042	1,569,026	147,042	93,643
2011	2,068,388	2,138,106	183,873	121,945
2012	2,370,211	2,523,020	177,409	133,283
2013	3,660,640	3,846,497	193,497	110,854
2014	2,880,896	3,179,394	215,344	100,489
2015	2,100,812	2,099,179	112,582	123,345
2016	2,818,797	3,123,434	141,753	108,395
2017	2,011,618	2,091,922	206,015	64,818
2018	1,482,612	1,890,508	106,437	70,247
2019	885,704	1,069,387	52,223	36,059

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, dredge for 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. Sinking gillnets and bottom trawls are the most significant in the WLA, followed by scallop dredges. In the ECC, bottom trawls and

scallop dredges are the most significant, followed by sinking gillnets and clam 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 4. Average annual landings of major species by area, 2008-2019.

	Mean		***Standard Deviation***	
Area/Species	**Value/year** (2020 $)	**Landings/year** (lbs)	**Value/year** (2020 $)	**Landings/year** (lbs)
Sunrise WLA				
ALL_OTHERS	559,908	712,732	526,411	603,320
Monkfish	377,837	224,763	134,917	39,911
Scallops/Bushel	243,724	21,375	180,466	16,581
Skate Wings	192,400	496,211	88,291	133,949
Lobster, American	131,173	23,676	34,047	6,421
Sunrise ECC				
Scallops/Bushel	62,591	5,704	45,989	4,658
ALL_OTHERS	17,814	21,860	17,907	21,597
Quahogs/Bushel	13,528	16,670	21,151	25,726
Monkfish	13,401	7,083	5,392	1,733
Squid/Loligo	11,494	8,877	4,379	3,925

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

	Mean		***Standard Deviation***	
Gear	**Value/year** (2020 $)	**Landings/year** (lbs)	**Value/year** (2020 $)	**Landings/year** (lbs)
ALL_OTHERS	608,138	720,798	514,302	601,202
Dredge - Clam	-	-	-	-
Dredge - Scallop	198,211	18,120	139,265	14,111
Gillnet – Other	-	-	-	-
Gillnet – Sink	550,603	563,390	210,752	193,006
Handline	3,387	917	4,821	1,122
Longline – Bottom	621	166	1,502	393
OTHER	7,764	691	26,896	2,394
Pot – Other	178,766	71,766	42,041	24,967
Trawl – Bottom	553,197	695,988	309,568	329,261
Trawl - Midwater	16,129	119,762	22,843	167,438

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

Gear	*Mean*		*Standard Deviation*	
	Value/year (2020 $)	**Landings/year** (lbs)	**Value/year** (2020 $)	**Landings/year** (lbs)
ALL_OTHERS	19,559	22,229	18,779	21,493
Dredge – Clam	13,897	16,872	20,984	25,656
Dredge – Scallop	57,149	5,238	41,824	4,275
Gillnet – Other	5	3	19	12
Gillnet – Sink	15,863	11,942	5,969	3,425
Handline	206	89	124	58
Longline - Bottom	45	12	102	27
OTHER	1,794	166	2,311	210
Pot - Other	3,581	2,040	1,053	541
Trawl – Bottom	31,799	28,050	7,171	5,388
Trawl - Midwater	2,143	15,782	1,998	14,316

Table 6 summarizes annual landings and landed value for the major ports receiving landings from the two areas. Point Judith (Rhode Island) and New Bedford (Massachusetts) are the most significant ports for landings from the Sunrise 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 68% 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)
Sunrise WLA				
New Bedford, MA	875,504	887,422	548,737	669,281
Point Judith, RI	546,080	525,298	262,657	338,703
Little Compton, RI	226,334	259,258	107,800	134,413
Newport, RI	138,952	181,915	68,718	91,330
Sunrise ECC				
New Bedford, MA	75,390	50,137	32,864	22,755
Point Judith, RI	15,923	12,784	6,679	2,777

Table 7a. Average annual landings in Sunrise WLA by state.

State	Mean		Standard Deviation	
	Value/year (2020 $)	Landings/year (lbs)	Value/year (2020 $)	Landings/year (lbs)
Rhode Island	1,034,863	1,124,470	267,459	277,149
Massachusetts	981,602	1,002,341	551,935	695,103
Others	99,838	64,361	--	--

Table 7b. Average annual landings in Sunrise ECC by state.

State	Mean		Standard Deviation	
	Value/year (2020 $)	Landings/year (lbs)	Value/year (2020 $)	Landings/year (lbs)
Rhode Island	22,218	19,853	8,703	3,996
Massachusetts	77,407	54,210	33,681	26,059
Others	46,394	28,347	--	--

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$, 2014-2019 (2020$).

Month	Sunrise WLA	Sunrise ECC
Jan	181,533	15,225
Feb	108,563	15,810
Mar	111,095	19,200
Apr	161,159	25,643
May	165,798	23,047
Jun	237,018	42,712
Jul	170,048	41,095
Aug	144,073	23,846
Sep	224,291	20,819
Oct	163,778	17,847
Nov	191,969	15,994
Dec	190,477	20,273

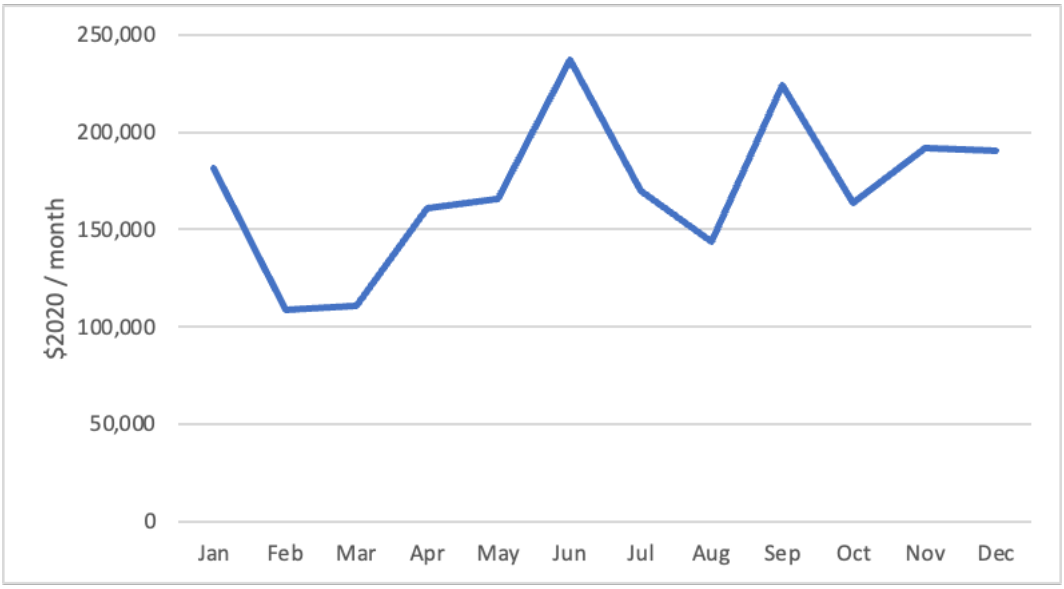

Figure 2. Average monthly value of landings, Sunrise WLA, 2014-2019.

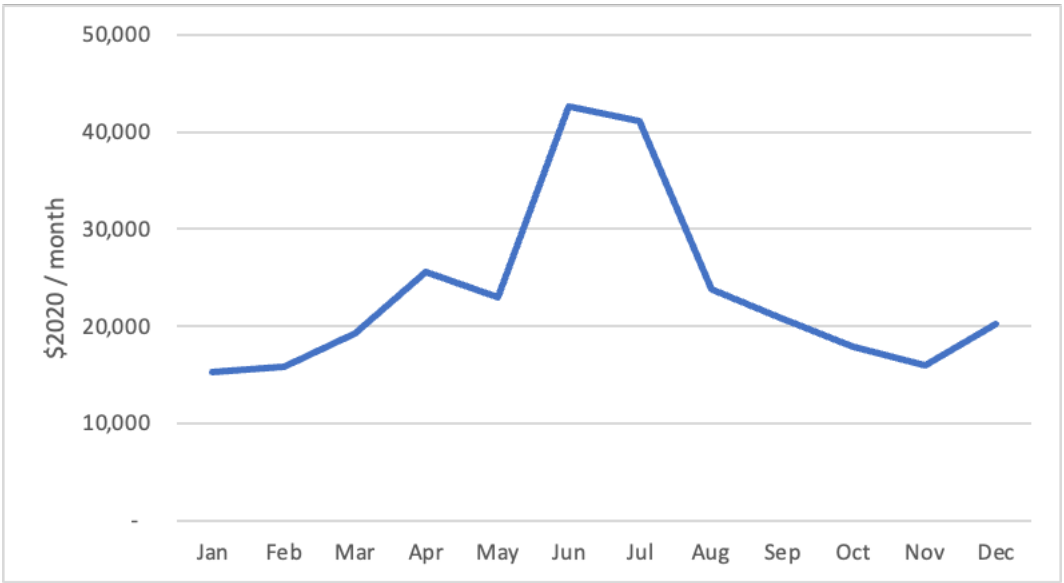

Figure 3. Average monthly value of landings, Sunrise ECC, 2014-2019.

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

Month	Sunrise WLA	Sunrise ECRA
Jan	315	480
Feb	167	323
Mar	149	305
Apr	208	452
May	367	732
Jun	502	923
Jul	575	789
Aug	579	705
Sep	501	677
Oct	380	589
Nov	335	588
Dec	365	646

Inter-annual price adjustments

We use the Bureau of Labor Statistics' Producer Price Index (PPI) for "unprocessed and prepared seafood"[3] 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) deflator[4] 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.

[3] https://www.bls.gov/ppi/#data

[4] 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 Vessel Trip Report (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 2[5] encompasses the waters south of Rhode Island and Cape Cod to a distance of about 40 nm, and includes the Sunrise WLA.) We assume conservatively that landings from 60% of the lobster vessels in the Sunrise 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

[5] 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 13.2% increase in the estimated total annual landed value for the WLA, and 3.3% increase for the ECC.

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

Value (2020$)	**Sunrise WLA**	**Sunrise ECC**
Avg. VTR total $/year (Table 2)	2,116,815	146,040
Avg. VTR lobster $/year (Tables A1-A3)	131,173	1,963
Avg. VTR Jonah crab $/year (Tables A1-A3)	35,412	1,159
% of total captured by VTR	40%	40%
Adjusted lobster $/year	351,981	5,019
Adjusted Jonah crab $/year	95,022	2,964
Net increase over VTR $/year (row 5+6-2-3)	280,419	4,861
Adjusted total $/year	2,397,234	150,901
Adjusted increase over VTR total value	13.2%	3.3%

With all adjustments, we estimate the average annual landed value in Rhode Island from the Sunrise WLA to be about $1.16 million (2020$), and from the Sunrise ECC about $23,000.

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 user 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.

The economic impact multiplier captures the linkages between the fishing industry sector and other sectors in the Rhode Island economy. While we use a single output multiplier for the entire commercial fishing sector in a given state, we recognize that the multiplier may in fact vary across specific fisheries, species, and gear due to differences in factor inputs for fishing operations and post processing of fish landed. We use a single multiplier for the entire commercial fishing sector, reflecting an average across all gear types and species. Economy-wide inflation affects all sectors in the economy but usually does not alter the general structure of the economy. Therefore, although the baseline economic values increase with rising prices, the multiplier does not. 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 inducted effects averaged across the fishing sectors.

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

		Average value of landings/year			**Total impact/year**
Area	**State**	VTR data only (Table 11, row 1)	with lobster & Jonah crab adjustment	with dockside sales adjustment (15% premium on RI lobster & JC landings)	"dockside sales" column multiplied by upstream & downstream multipliers, except RI lobster & JC
Sunrise WLA	total	2,116,815	2,366,693	2,397,234	5,214,570
Sunrise ECC	total	146,040	150,723	150,901	332,878
Sunrise WLA	RI	1,034,911	1,157,076	1,187,617	2,546,580
Sunrise ECC	RI	22,213	22,925	23,103	50,748

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 Sunrise WLA to be about $2.55 million in Rhode Island (Table 12). We also estimate the average annual total economic impact from commercial fishing activity in the Sunrise ECC to be about $51,000 in Rhode Island. Including landings in other states, the total average annual economic impact from commercial fishing activity in the WLA is $5.21 million and in the ECC it is $333,000. 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.

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 Sunrise 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

Table 13. Assumptions for exposure of commercial fisheries to wind farm development.

Categories of Potential Exposure			Assumptions/Effects	Duration
Availability effects due to construction	WTGA+7.5km		100% of finfish leave area (a)	1 year
	WLA		Lobster/crab landings reduced 10% (b) Other shellfish landings reduced 10% (c)	2 years 5 years
	ECRA	1.6km WA	All landings reduced 10% (d)	1 year
		180m ECC	Lobster/crab landings reduced 25% (e) Other shellfish landings reduced 25% (f)	2 years 5 years
Construction constrained access	WLA		No fishing in 50% of area (g)	2 years
	ECRA	1.6km WA	No fishing in 5% of area (h)	1 year
		180m ECC	No fishing in 100% of area (i)	9 months
Effects during operations	WLA		Landings reduced by 5% (j)	30 years
	ECRA	1.6km WA	None	
		180m ECC	None	
Availability effects due to decommissioning	WLA		None beyond constrained access	
	ECRA	1.6km WA	All landings reduced 5% (k)	1 year
		180m ECC	Lobster/crab landings reduced 12.5% (l) Other shellfish landings reduced 12.5% (m)	1 year 4 years
Decommissioning constrained access	WLA		No fishing in 50% of area (n)	1 year
	ECRA	1.6km WA	No fishing in 5% of area (o)	2 months
		180m ECC	No fishing in 100% of area (p)	2 months

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

The assumptions and effects on fish availability and fishing activity/landings are summarized in Table 13 for each category and project area. For the purpose of estimating construction noise-related effects, we define a Wind Turbine Generator Area (WTGA) as the subset of the WLA in which turbine generator towers are to be located. The WTGA lies within the WLA and is slightly smaller in total footprint, since not all of the WLA is utilized for turbine generator towers; we recognize that final turbine generator siting decisions have not been made for Sunrise Wind, and refer here to the "indicative turbine layout" as of August 2022 (see Figure 3.3.4-1 of the Sunrise Wind Construction and Operations Plan (Sunrise Wind LLC 2022)). In the sections that follow Table 13, 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 Sunrise Wind Construction and Operations Plan (Sunrise Wind LLC 2022) and from acoustic modeling work for wind farm turbine foundation installation (Küsel *et al.* (JASCO) 2022).

The estimates we present in the following sections include all commercial fishing in the Sunrise 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 Sunrise Wind area landed value. The baseline values for each project area and species group are shown in Table 14.

Table 14. Baseline landed values (2020$) used for exposure calculations.

	WLA	WTGA+7.5km	1.6km ECC WA	180m ECC
Total landed value:	**2,397,234**		**1,341,343**	**150,901**
Lobster & Jonah crab	447,004		70,961	7,983
Other crabs	2,828		773	87
Scallops	243,725		610,649	68,698
Other shellfish	4,165		1,724	194
Finfish/mobile species	1,699,512	4,210,284	657,236	73,939
RI landed value:	**1,187,617**		**205,360**	**23,103**
Lobster & Jonah crab	234,150		12,135	1,365
Other crabs	1,383		378	43
Scallops	119,157		298,546	33,586
Other shellfish	2,036		843	95
Finfish/mobile species	830,891	2,058,408	321,322	36,149

Transient availability effects due to construction

The construction schedule (Figure 3.2.2-1, page 3-6, Sunrise Wind LLC 2022) envisions construction activity in the WLA taking place mainly during the second half of 2024 and much of 2025, with some work on the inter-array cables beginning in the first half of 2024. Work on offshore foundations will take place in the second half of 2024; and work along the ECC is scheduled to take place during the second and fourth quarters of 2024, and the first quarter of 2025. 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 Sunrise 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 Sunrise Wind Farm acoustic exposure analysis (Küsel *et al.* (JASCO) 2022) models noise propagation from pile driving at three tower locations in the Sunrise Wind layout. The distance at which pile driving noise with 10 dB of attenuation at the source drops to 160 dB for these three tower locations is found in row 5 of tables G-22, G-24, and G-26 (pages G-27, G-31, and G-35) of Küsel *et al.* (JASCO) (2022). (The data in these tables are for un-attenuated sources; the 170 dB values here are equivalent to 160 dB with 10 dB of attenuation.). The relevant distances in summer and winter are 6.67, 7.59, 6.92, 7.50, 6.82, and 7.04 km.

Based on these values, we estimate that the maximum range for pile driving noise with 10 dB of attenuation in the Sunrise Wind setting is likely to be about 7.5 km for 160 dB. We therefore assume conservatively that all finfish leave the WTGA and a 7.5 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 13 (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 Sunrise Wind, we obtained data from NOAA on average annual landings from a region enclosed by a 7.5 km buffer around the Sunrise WTGA. The annual value of finfish landings reported by NOAA for this region is $4,210,284 (2020$). The discounted value (at 5%) from the 2024-25 construction year is $3,380,333 (2020$), of which $1,652,645 is attributable to Rhode Island.

We also consider loss of shellfish due to construction noise and burial resulting from foundation installation and inter-array cable work. 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; Küsel *et al.* (JASCO) 2022). This level of exposure will extend no more than 160 m from tower locations (Küsel *et al.* (JASCO) 2022, p. 39, Table 4.3-1, "Fish without swim bladder"), a radius that covers 1.9% of the WLA footprint assuming all 102 potential tower locations are built out (in fact the Sunrise construction plan (Sunrise LLC 2022) anticipates development at no more than 95 of these locations, up to 94 turbine towers and one offshore converter station). In addition, we account for up to 290 km of inter-array cable burial that

may disturb the seabed across a 40 m wide corridor around the cables, affecting up to 2.7% of the WLA footprint. Ignoring overlap to be conservative, this suggests a maximum combined affected seabed area amounting to 4.6% of the WLA footprint.

To be even more conservative, we increase the estimate of the effect by a factor of two, to 10% of the WLA footprint, and assume that 10% of the lobster, crab, scallop, and other shellfish populations within the WLA are adversely affected by pile driving noise, seabed disturbance around foundations, and cable installation during construction, and thus lost to fishing (Table 13 (b and c)) for all of the 2024 and 2025 construction years. We assume that lobster and crab will repopulate the portions of the WLA from which they are displaced within a year after construction work ends, and that scallop and other non-mobile shellfish stocks in those portions of the WLA will rebuild over the course of four years (Table 13(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 route – 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 two years and all non-mobile shellfish over five years from the ECC (Table 13 (e and f)), and a 10% reduction in landings for all species for one year from the 1.6km ECC Working Area (Table 13 (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, Sunrise 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 Sunrise WLA for two years (Table 13 (g)), and in 5% of the 1.6km ECC Working Area for 12 months (Table 13 (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 nine months (Table 13 (i)) as the cable is buried by a separate vessel.

We use as a basis for our calculations the average annual values for each area (Table 14), 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 WLA. To be conservative, we do not adjust for double-counting of effects in the overlap between the 7.5 km buffer around the WTGA and the ECC.

Table 15. Estimated value of landings associated with construction effects.

Area	**Estimated Landed Value Exposure** (2020$)	
	Total	**Rhode Island**
Sunrise WLA / WTGA + 7.5km	4,105,647	2,022,294
Export Cable Corridor / WA	298,817	66,250

Table 15 shows the combined results of the availability and constrained access effects (Table 13 (a)-(i)). The total value of landings associated with construction effects is estimated to be about $4.39 million (2020$), of which about $2.08 million is associated with landings in Rhode Island.

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 Sunrise 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.

Appendices N2 and BB of the Sunrise Wind COP (Sunrise Wind LLC 2022) describe the expected effects of cooling water intake and effluent at the offshore converter station. At 8.1 million gallons per day maximum flow, the total annual flow of cooling water through the converter station is equivalent to less than 0.1% of the volume of water within the Sunrise WLA. The extent of the thermal plume from cooling water effluent (a one degree C or greater difference from ambient water temperature) will depend on the season and current speed. The largest plume would be about 25 meters from the discharge pipe, in the spring during slack tide. As such, the thermal plume will be undetectable at most times outside the 77 x 52 meter footprint of the converter station platform. While the converter station cooling water flow is expected to result in the loss of some amount of ichthyoplankton, floating fish eggs, and fish larvae as described in Appendix N2 of the Sunrise COP, we do not expect this effect to be detectable in the fish stock biomass in and around the Sunrise WLA, or in the fishery landings from the WLA.

Fishing activity constraints during wind farm operations apply only to the WLA; we do not expect any constraints along the ECC during operations. The footprint of the Sunrise Wind project area is 43,060 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 and the converter station accounts for about 0.7% of the total WLA, suggesting that less than 1% of the WLA area may be lost to fishing. Mobile gear (dredge, trawl) fishing accounts for less than half of landed value from the Sunrise WLA. We assume

conservatively that as much as 5% of total baseline landings from all stocks within the WLA may be lost to fishing during operations (Table 13 (j)).

Since the Sunrise 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 2026.

The resulting estimate of the total value of potential lost landings during project operations is $1,374,953, of which $681,167 is associated with landings in Rhode Island.

Transient effects from constrained access and availability effects during decommissioning

After approximately 30 years of operations, Sunrise 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 WLA during decommissioning, will extend for about one year. Because relatively little noise is associated with decommissioning compared to construction, we do not model decommissioning effects in the WLA beyond the effects that overlap with access constraints (Table 13 (n)).

We expect that access constraints along the export cable route 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 13 (o) and (p)). Because cable removal is less disruptive that burial, we model half of the availability effect for decommissioning as we do for cable installation (Table 13 (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 $239,849, of which $112,967 is associated with landings in Rhode Island.

In summary, the total landed value from fishing in federal waters potentially exposed to Sunrise Wind project development is estimated to be about $6.0 million (2020$), of which $5.7 million is associated with the WLA (plus 7.5 km perimeter) and $321,000 is associated with the ECC. Rhode Island landings account for about 50% of total landings from the WLA and 15% of total landings from the ECC. The landed value of Rhode Island commercial landings potentially exposed by Sunrise Wind development is therefore about $2.88 million. This includes about $2.09 million in forgone landings due to construction, $681,000 during operations, and $113,000 during decommissioning.

Applying the upstream and downstream multipliers as described above results in an estimate of $3.37 million in indirect and induced effects in Rhode Island, for a total impact of $6.25 million.

BOEM draft guidelines for mitigation impacts to fisheries

In 2022, the Bureau of Ocean Energy Management (BOEM) of the US Department of the Interior issued draft Guidelines for Mitigating Impacts to Commercial and Recreational Fisheries on the Outer Continental Shelf (BOEM 2022). These draft guidelines discuss “best management practices and

mitigation measures to reduce potential impacts to commercial and recreational fisheries." These include provisions for "compensation for lost fishing income," based on "ex-vessel value of the fish landed," and the recommendation that lessees consider making available funds for compensatory mitigation in the amount of "100 percent of revenue exposure for the first year after construction, 80 percent of revenue exposure 2 years after construction, 70 percent of revenue exposure 3 years after construction, 60 percent after four years, and 50 percent after five years post construction."

The BOEM draft guidelines are intended to ensure that adequate funds are available to compensate lost fishing income, and are not intended to produce a project-specific estimate of likely actual losses. For example, it is unlikely that no fishery landings of any kind will be realized from the project area in the first year after construction ("100 percent of revenue exposure"); and the draft guidelines contain no provisions for adjustment of these values in light of the specific parameters of the project, such as turbine tower spacing. As such, the payment structure suggested by BOEM in the draft guidelines should not be interpreted as equivalent to the expected losses estimated in this report.

With that caveat, we estimate that the present value (in 2020$) of the amounts BOEM recommends making available for potential losses to Rhode Island-based commercial fishing during the first five years of operations amount to $2.95 million. BOEM acknowledges that using total ex-vessel landed value as the basis for these amounts is likely to result in an over-estimation of net income loss, since net income is revenue minus expenses, and suggests that using total ex-vessel landed value "is likely to be sufficient to cover shoreside income loss" as well, without applying further multipliers.

Rhode Island-based charter fishing

To obtain data on for-hire charter fishing activity in the Sunrise Wind Lease Area (WLA) and Export Cable Corridor (ECC), 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 4. 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 16). 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 4, 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 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.

Table 16. 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

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. Tables 17 and 18 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 shown in Figure 4. (The WTGA analysis is based on a WTGA shapefile received from Inspire Environmental in November 2020, and reflects the turbine tower layout planned for Sunrise Wind at that time. This layout is subject to change.) Note that some of the trips shown for the ECRA (Table 18) are also included in the numbers for the WTGA + 7.5 km buffer (Table 17).

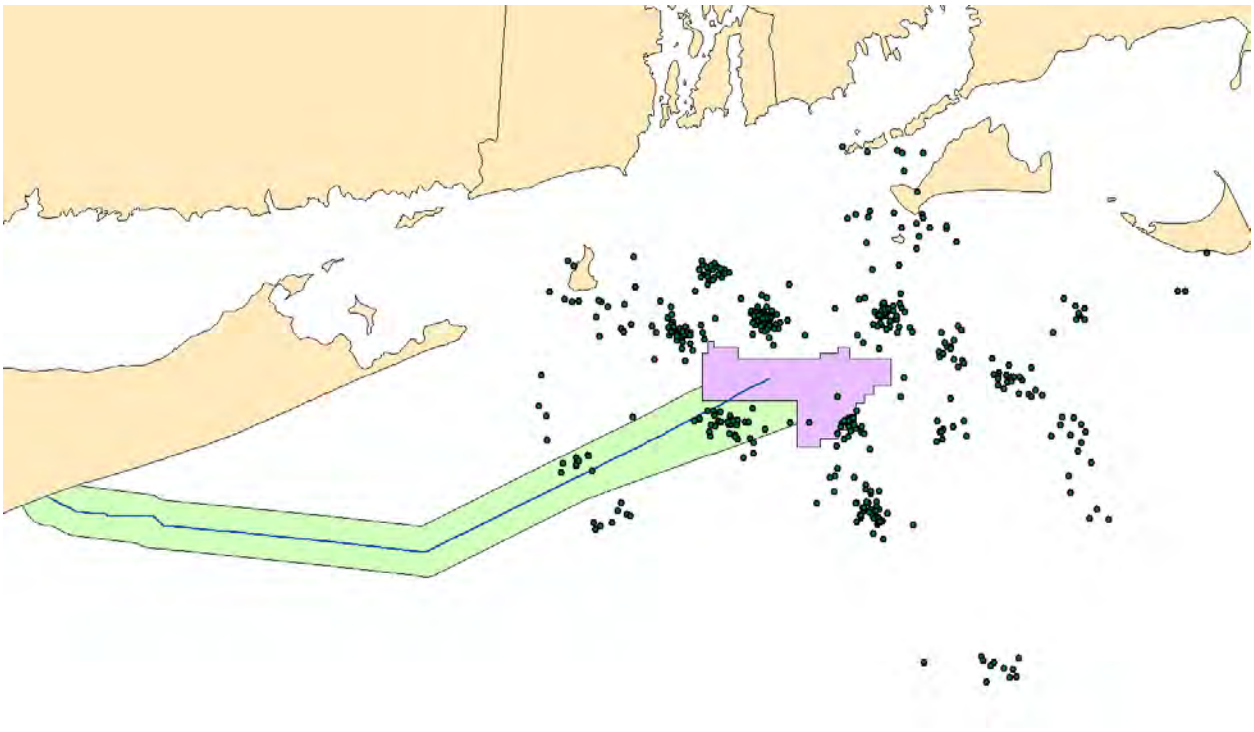

Figure 4. Charter fishing locations, 2017-2021, identified in survey responses. WLA is shown in purple, and ECRA in green.

Table 17. Number of Rhode Island-based vessel trips and anglers by year, Sunrise WLA.

Year	WLA + 7.5 km buffer		WTGA + 7.5 km buffer	
	Vessel Trips	Anglers	Vessel Trips	Anglers
2017	157	894	108.5	625
2018	145.5	857	124.5	731
2019	114	651	71	407
2020	108.5	598	73	386
2021	172	947	135	739
Average	**139.4**	**789.4**	**102.4**	**577.6**

Table 18. Number of Rhode Island-based vessel trips and anglers by year, Sunrise ECRA.

Year	Vessel Trips	Anglers
2017	43	244
2018	49.5	295
2019	70	417
2020	58	344
2021	72	381
Average	**58.5**	**336.2**

We use the revenue per angler estimates from NOAA shown in the Table 19 below 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 19 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$ ($104.94) to 2020$ ($106.15) using the GDP implicit price deflator (2019: 112.3; 2020: 113.6).

Table 19. Sunrise Wind area for-hire vessel revenue from NOAA VTR data. Source: NOAA (2021).

Year	Revenue per angler (2019$)
2008	87.52
2009	99.36
2010	111.48
2011	122.56
2012	116.79
2013	112.68
2014	109.76
2015	106.30
2016	101.74
2017	100.42
2018	85.71
Average	**104.94**

The annual revenue for each area is estimated by multiplying the number of anglers (Tables 17 and 18) by the average revenue per angler ($106.15). 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. As with commercial fishing, we recognize that this multiplier will in fact vary with different types of charter fishing (e.g. sport fishing charters versus party boats). The multiplier we use is calculated using data in the NOAA report by Lovell *et al*. (2020), and reflects an average across different types of charter fishing. The results are shown in Table 20.

Table 20. Annual revenue and economic impact from RI-based charter fishing in Sunrise Wind areas.

Area	**Annual anglers**	**Revenue per angler** (2020$)	**Scale factor**	**Annual revenue** (2020$)	**Impact multiplier**	**Annual impact** (2020$)
WLA+7.5km	789.4	106.15	Low: 2.333	195,525	1.622	317,141
			High: 3.763	315,362	1.622	511,517
WTGA+7.5km	577.6	106.15	Low: 2.333	143,064	1.622	232,050
			High: 3.763	230,749	1.622	374,275
ECRA	336.2	106.15	Low: 2.333	83,271	1.622	135,066
			High: 3.763	134,308	1.622	217,848

As Figure 4 and Table 17 illustrate, there is little evidence of charter fishing within the Sunrise WLA, but substantial charter fishing activity just outside the boundary of the WLA. (Depending on final decisions regarding turbine generator tower layout, the amount of charter fishing value affected may be lower, as suggested by the WTGA+7.5km values in Table 20.). We assume conservatively that the value of charter fishing at the Sunrise Wind development areas, including a 7.5 km buffer around the entire WLA, is foregone in the construction year when pile driving takes place, since we expect finfish to leave this area due to construction noise, and also in the decommissioning year of the project. 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 Sunrise 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.

We therefore base our calculation of exposure on the WLA with 7.5 km buffer and the ECRA, ignoring any overlap. We use the combined high-end revenue and impact estimates ($315,362 + $134,308 and $511,517 + $217,848 per year, respectively), and assume that this value is forgone during the pile driving and decommissioning years. Using a 5% discount rate, the present value of the two years of effects, using the high-end estimates, is about $443,000 (2020$) in revenue, and $718,000 in total impact in Rhode Island.

Rhode Island-based private recreational fishing

We estimate that Rhode Island-based private recreational fishing in the Sunrise Wind WLA amounts to about 1,470 trips per year, and annual expenditure of about $126,000 (2020$). This estimate is based on Marine Recreational Information Program (MRIP[6]) data on RI-based private recreational fishing effort in federal waters, assuming that this fishing effort is uniformly distributed over the known recreational and for-hire fishing grounds in federal waters, and the intersection of RI OSAMP recreational fishing maps and our for-hire charter fishing survey with the Sunrise WLA.

Some of this recreational fishing is likely to be diverted to other locations during the Sunrise construction period. During Sunrise Wind operations, we expect recreational fishing in the Sunrise WLA to be at or above pre-construction levels,[7] due to fish aggregations around wind farm structures. On aggregate over the life of the project, we expect no net change in RI-based recreational fishing economic value from the Sunrise Wind development.

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 Sunrise Wind Lease Area to be about 2,397,000 (2020$). Of this, about $1,188,000 is landed in Rhode Island. Including indirect and induced effects, these landings generate average annual economic impacts of $2,547,000 in Rhode Island.

We estimate the average annual value of commercial landings from the Sunrise Wind Export Cable Corridor to be about $151,000. Of this, about $23,000 is landed in Rhode Island. These landings generate estimated total annual economic impacts of $51,000 in Rhode Island.

We estimate that a total (lump sum) of $2,883,000 (2020$) of commercial fisheries value landed in Rhode Island is potentially exposed to the Sunrise Wind development. This accounts for about 48% of the total potentially exposed landed value for Sunrise Wind. It includes about $2,088,000 in direct landed value forgone due to construction activities, $681,000 from forgone landings during the wind farm's operation, and $113,000 in present value of foregone landings due to decommissioning.

Rhode Island-based charter fishing revenue exposure to the Sunrise Wind development is estimated to have a present value of $443,000.

Including indirect and induced effects, the potentially affected commercial landings and charter fishing revenue together result in about $6,969,000 in total (lump sum, 2020$) present value economic impact in Rhode Island. Table 21 summarizes these values.

[6] https://www.fisheries.noaa.gov/recreational-fishing-data/about-marine-recreational-information-program

[7] Smythe et al. (2021) found that offshore wind farms did not necessarily conflict with angling, and the RI wind farm was viewed as an enhanced fishing destination.

There is considerable variability in the baseline data of landings and landed value from the Sunrise 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 $6.97 million in economic impacts to Rhode Island from Sunrise Wind development effects on commercial and charter fishing to be a conservative upper bound on likely actual impacts.

Table 21. Estimated Rhode Island fishing industries exposure from Sunrise Wind development

Categories of Potential Exposure		**RI Direct Landed Value/Revenue (2020$)**
Construction-related effects	WLA+	$2,022,000
	ECRA	$66,000
Effects during operations	WLA	$681,000
	ECRA	---
Decommissioning-related effects	WLA	$108,000
	ECRA	$5,000
Subtotal RI commercial direct effects		**$2,883,000**
RI for-hire charter fishing direct effects		$443,000
Total RI direct effects		**$3,325,000**

Categories of Potential Exposure	**RI Total Impact with Multipliers (2020$)**
Subtotal RI commercial fishing	**$6,251,000**
RI for-hire charter fishing	$718,000
Total Rhode Island impacts	**$6,969,000**

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Appendix

Table A1. Average annual landings by species from the Sunrise 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	559,908	712,732	526,411	603,320
AMBERJACK, SPECIES NOT SPECIFIED	0	0	0	0
BLACK BELLIED ROSEFISH	0	0	0	0
BLACK SEA BASS	12,222	2,786	6,385	1,733
BLUEFISH	3,407	4,536	1,962	2,436
BONITO	291	90	476	133
BUTTERFISH	17,038	22,772	18,509	25,517
CLAM, SURF/BUSHEL	0	0	0	0
COBIA	0	0	0	0
COD	41,370	13,863	24,423	8,494
CRAB, BLUE/BUSHEL	18	15	42	36
CRAB, CANCER	0	0	0	0
CRAB, HORSESHOE	0	0	0	0
CRAB, JONAH	35,412	41,332	21,818	22,824
CRAB, ROCK/BUSHEL	2,792	4,117	3,206	4,660
CRAB, SPECIES NOT SPECIFIED	18	31	24	43
CREVALLE	0	0	0	0
CROAKER, ATLANTIC	86	189	174	425
CUNNER	730	156	1,471	255
CUSK	0	0	0	0
DOGFISH, SMOOTH	641	1,661	806	2,987
DOGFISH, SPINY	13,758	66,355	10,002	51,664
DOLPHIN FISH / MAHI-MAHI	0	0	1	1
DRUM, BLACK	0	0	0	0
EEL, AMERICAN	9	10	11	13
EEL, CONGER	215	305	304	405
EEL, SPECIES NOT SPECIFIED	17	19	16	15
FLOUNDER, AMERICAN PLAICE /DAB	306	130	747	320
FLOUNDER, FOURSPOT	20	37	30	64
FLOUNDER, SAND-DAB / WINDOWPANE / BRILL	290	374	541	691
FLOUNDER, SOUTHERN	0	0	0	0
FLOUNDER, SUMMER / FLUKE	97,628	27,773	64,534	20,822
FLOUNDER, WINTER / BLACKBACK	55,691	19,842	61,694	21,164
FLOUNDER, WITCH / GRAY SOLE	296	109	238	83
FLOUNDER, YELLOWTAIL	57,000	28,950	60,324	36,530
FLOUNDER,NOT SPECIFIED	0	0	0	0
HADDOCK ROE	1,286	1,237	2,916	3,094
HAKE, OFFSHORE	266	350	743	976

HAKE, RED / LING	7,089	23,350	6,032	22,211
HAKE, SILVER / WHITING	64,298	106,558	51,011	96,799
HAKE, WHITE	790	532	1,679	1,205
HAKE,SPOTTED	0	0	1	1
HALIBUT, ATLANTIC	63	7	112	13
HARVEST FISH	0	0	0	0
HERRING, ATLANTIC	24,654	159,535	26,124	179,528
HERRING, BLUE BACK	0	0	0	0
JOHN DORY	97	74	107	78
LOBSTER, AMERICAN	131,173	23,676	34,047	6,421
MACKEREL, ATLANTIC	4,243	17,554	7,088	38,138
MACKEREL, CHUB	2	4	7	13
MACKEREL, KING	0	0	0	0
MACKEREL, SPANISH	2	1	6	2
MENHADEN	0	1	0	2
MONK	377,837	224,763	134,917	39,911
MULLETS	1	2	4	5
OCEAN POUT	26	20	73	59
OTHER FINFISH	0	1	0	1
PERCH, WHITE	0	0	0	0
POLLOCK	94	78	105	98
PUFFER, NORTHERN	0	0	0	0
QUAHOGS/BUSHEL	0	0	0	0
RED PORGY	0	0	0	0
REDFISH / OCEAN PERCH	3	2	8	6
SCALLOPS,BAY/SHELLS	1	0	4	0
SCALLOPS/BUSHEL	243,724	21,375	180,466	16,581
SCORPIONFISH	1	1	5	4
SCUP / PORGY	63,029	92,599	51,362	78,456
SEA RAVEN	153	104	272	197
SEA ROBINS	21	124	19	122
SEATROUT, SPECIES NOT SPECIFIED	13	24	18	37
SHAD, AMERICAN	0	0	1	1
SHAD, HICKORY	0	0	0	0
SHARK, SANDBAR	0	0	0	0
SHARK, THRESHER	4	4	13	14
SHEEPSHEAD	0	0	0	0
SKATE WINGS	192,400	496,211	88,291	133,949
SKATE WINGS, CLEARNOSE	5	13	16	44
SPOT	1	4	5	13
SQUID / ILLEX	2,347	2,454	6,605	5,293
SQUID / LOLIGO	92,798	70,056	92,364	71,383
STARGAZER,NORTHERN	0	0	0	0
STRIPED BASS	3,238	677	2,335	483
SWORDFISH	0	0	0	0
TAUTOG	795	212	606	159
TILEFISH	0	0	0	0
TILEFISH, BLUELINE	3	1	4	1

TILEFISH, GOLDEN	1,963	518	1,659	404
TILEFISH, SAND	0	0	0	0
TRIGGERFISH	28	16	34	18
TUNA, ALBACORE	48	64	158	209
TUNA, LITTLE	63	74	155	163
TUNA, SKIPJACK	0	0	0	0
WEAKFISH	405	189	424	189
WHELK, CHANNELED/BUSHEL	4,157	522	7,792	974
WHELK, KNOBBED/BUSHEL	8	3	18	10
WHELK, LIGHTNING	0	0	0	0
WHELK,WAVED	0	0	0	0
WHITING, KING / KINGFISH	420	372	666	584
WOLFFISH / OCEAN CATFISH	0	0	0	0

Table A2. Average annual landings by species from the Sunrise 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.)

	Mean		***Standard Deviation***	
Species	**Value/year** (2020 $)	**Landings/year** (lbs)	**Value/year** (2020 $)	**Landings/year** (lbs)
ALL_OTHERS	1,086,214	1,332,928	1,091,900	1,316,866
AMBERJACK, SPECIES NOT SPECIFIED	0	0	0	0
BLACK BELLIED ROSEFISH	0	0	1	1
BLACK SEA BASS	53,033	12,521	19,313	5,061
BLUEFISH	18,957	23,346	8,936	11,229
BONITO	1,050	412	1,533	595
BUTTERFISH	16,597	21,037	6,373	8,275
CLAM, SURF/BUSHEL	7,967	10,441	16,727	22,297
COBIA	26	8	43	12
COD	41,005	15,173	26,421	9,161
CRAB, BLUE/BUSHEL	147	117	340	270
CRAB, CANCER	0	0	0	0
CRAB, HORSESHOE	247	216	338	315
CRAB, JONAH	70,684	86,389	26,048	26,734
CRAB, ROCK/BUSHEL	4,138	6,237	4,594	6,911
CRAB, SPECIES NOT SPECIFIED	227	426	485	929
CREVALLE	1	1	2	2
CROAKER, ATLANTIC	457	653	1,003	1,212
CUNNER	551	162	615	152
CUSK	2	2	6	7
DOGFISH, SMOOTH	8,424	12,688	2,083	4,090
DOGFISH, SPINY	9,165	38,144	7,462	23,274
DOLPHIN FISH / MAHI-MAHI	3	1	7	2
DRUM, BLACK	0	0	1	1
EEL, AMERICAN	4,314	220	13,905	275
EEL, CONGER	1,384	1,409	1,333	1,355
EEL, SPECIES NOT SPECIFIED	1,271	1,124	1,436	1,092
FLOUNDER, AMERICAN PLAICE /DAB	234	106	372	164
FLOUNDER, FOURSPOT	271	522	198	432
FLOUNDER, SAND-DAB / WINDOWPANE / BRILL	1,685	1,943	2,831	3,254
FLOUNDER, SOUTHERN	9	3	32	9
FLOUNDER, SUMMER / FLUKE	447,054	130,148	115,523	47,087
FLOUNDER, WINTER / BLACKBACK	35,113	12,948	35,858	12,299
FLOUNDER, WITCH / GRAY SOLE	2,015	634	2,164	637
FLOUNDER, YELLOWTAIL	90,579	45,204	87,064	47,122
FLOUNDER,NOT SPECIFIED	8	4	25	11
HADDOCK ROE	1,635	1,668	5,262	5,517
HAKE, OFFSHORE	646	785	838	925

HAKE, RED / LING	9,314	18,667	3,458	7,883
HAKE, SILVER / WHITING	60,678	74,726	29,213	33,972
HAKE, WHITE	748	491	1,096	748
HAKE,SPOTTED	16	27	42	66
HALIBUT, ATLANTIC	86	11	107	15
HARVEST FISH	0	1	1	1
HERRING, ATLANTIC	148,770	1,050,510	115,439	863,625
HERRING, BLUE BACK	73	283	109	502
JOHN DORY	466	382	499	418
LOBSTER, AMERICAN	119,695	21,316	55,229	9,922
MACKEREL, ATLANTIC	31,534	135,262	49,179	243,327
MACKEREL, CHUB	299	419	1,009	1,391
MACKEREL, KING	1	0	3	1
MACKEREL, SPANISH	125	51	124	50
MENHADEN	870	7,225	1,154	9,986
MONK	817,138	431,906	328,751	105,659
MULLETS	33	38	51	64
OCEAN POUT	198	157	483	362
OTHER FINFISH	75	54	219	126
PERCH, WHITE	0	1	1	1
POLLOCK	245	245	609	687
PUFFER, NORTHERN	0	0	0	0
QUAHOGS/BUSHEL	824,865	1,016,461	1,289,689	1,568,629
RED PORGY	7	13	25	44
REDFISH / OCEAN PERCH	3	4	6	8
SCALLOPS,BAY/SHELLS	38	3	132	11
SCALLOPS/BUSHEL	3,816,495	347,782	2,804,183	283,996
SCORPIONFISH	5	14	15	34
SCUP / PORGY	170,198	213,291	47,097	80,257
SEA RAVEN	102	76	178	138
SEA ROBINS	172	754	74	309
SEATROUT, SPECIES NOT SPECIFIED	58	74	82	56
SHAD, AMERICAN	39	58	46	82
SHAD, HICKORY	7	8	23	27
SHARK, SANDBAR	1	0	2	1
SHARK, THRESHER	98	65	162	95
SHEEPSHEAD	0	1	1	1
SKATE WINGS	221,893	603,399	86,517	150,471
SKATE WINGS, CLEARNOSE	51	150	136	417
SPOT	125	161	257	383
SQUID / ILLEX	883	1,144	1,150	1,186
SQUID / LOLIGO	700,858	541,276	267,036	239,357
STARGAZER,NORTHERN	0	0	0	0
STRIPED BASS	49,469	11,721	18,535	4,349
SWORDFISH	12	3	21	4
TAUTOG	2,231	602	1,680	454
TILEFISH	0	0	1	0
TILEFISH, BLUELINE	24	12	26	14

TILEFISH, GOLDEN	7,544	1,997	6,374	1,770
TILEFISH, SAND	2	1	6	2
TRIGGERFISH	265	148	148	106
TUNA, ALBACORE	207	185	322	270
TUNA, LITTLE	388	520	364	575
TUNA, SKIPJACK	3	2	11	6
WEAKFISH	3,195	1,505	2,444	1,286
WHELK, CHANNELED/BUSHEL	2,079	430	2,291	376
WHELK, KNOBBED/BUSHEL	149	100	259	199
WHELK, LIGHTNING	55	21	152	55
WHELK,WAVED	503	707	1,210	1,670
WHITING, KING / KINGFISH	1,890	1,609	3,865	3,086
WOLFFISH / OCEAN CATFISH	0	0	0	0

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 (PANAEID)
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
GROUPER, OTHER
GROUPER, 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 Sunrise WLA by port.

Port	*Mean* Value/year (2020 $)	*Mean* Landings/year (lbs)	*Standard Deviation* Value/year (2020 $)	*Standard Deviation* Landings/year (lbs)
ALL_OTHERS	53,195	71,187	114,525	143,689
ATLANTIC CITY	0	0	0	0
BARNEGAT	0	0	0	0
BARNSTABLE	43	16	148	54
BEAUFORT	2,605	1,008	2,843	1,129
BELFORD	48	20	166	71
BOSTON	1,512	2,692	2,434	5,682
BRISTOL	0	0	0	0
CAPE MAY	903	419	1,692	1,081
CHATHAM	5,033	4,278	11,127	9,439
CHILMARK	4,785	973	7,195	1,565
CHINCOTEAGUE	57	20	198	68
DAVISVILLE	1,318	1,746	3,174	5,535
FAIRHAVEN	16,201	10,368	26,977	17,169
FALL RIVER	2,931	10,891	4,303	17,377
FALMOUTH	0	0	0	0
FREEPORT	0	0	0	0
GLOUCESTER	3,693	27,040	12,275	90,800
HAMPTON	6,389	3,140	11,196	6,034
HAMPTON BAY	28	21	67	53
HARWICHPORT	1,111	207	3,051	567
HYANNIS	0	0	0	0
ISLIP	0	0	0	0
JAMESTOWN	0	0	0	0
LITTLE COMPTON	226,334	259,258	107,800	134,413
LONG BEACH	0	0	0	0
MENEMSHA	5,425	957	10,326	1,659
MONTAUK	41,198	24,325	17,716	11,684
MOREHEAD CITY	0	0	0	0
MORICHES	0	0	0	0
NANTUCKET	0	0	0	0
NEW BEDFORD	875,504	887,422	548,737	669,281
NEW LONDON	7,504	8,638	7,769	9,456
NEW SHOREHAM	718	406	760	813
NEWPORT	138,952	181,915	68,718	91,330
NEWPORT NEWS	3,176	1,528	7,079	3,798
NORTH KINGSTOWN	0	0	0	0
OCEAN CITY	0	0	0	0
ORIENTAL	0	0	0	0
OTHER NASSAU	0	0	0	0
OTHER WASHINGTON(COUNTY)	0	0	0	0
POINT JUDITH	546,080	525,298	262,657	338,703

POINT LOOKOUT	0	0	0	0
POINT PLEASANT	3,422	1,664	4,334	2,086
SANDWICH	198	191	686	660
SHINNECOCK	262	254	790	780
STONINGTON	20,969	9,586	27,023	7,596
TIVERTON	38,976	48,182	54,191	63,536
VINEYARD HAVEN	0	0	0	0
WANCHESE	1,321	501	3,633	1,376
WESTPORT	48,050	35,531	25,949	31,021
WILDWOOD	0	0	0	0
WOODS HOLE	5,680	731	13,266	1,708

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

	Mean		***Standard Deviation***	
Port	**Value/year** (2020 $)	**Landings/year** (lbs)	**Value/year** (2020 $)	**Landings/year** (lbs)
ALL_OTHERS	143,117	176,898	191,660	245,183
ATLANTIC CITY	77,527	70,495	121,388	109,654
BARNEGAT	8,747	1,120	17,512	1,775
BARNSTABLE	0	0	0	0
BEAUFORT	17,715	6,051	21,168	6,382
BELFORD	7,339	3,311	16,143	7,042
BOSTON	855	971	1,400	1,483
BRISTOL	0	0	0	0
CAPE MAY	148,766	105,942	131,194	162,371
CHATHAM	382	231	897	619
CHILMARK	452	119	1,175	309
CHINCOTEAGUE	3,435	1,466	4,610	1,872
DAVISVILLE	13,160	5,945	33,605	16,782
FAIRHAVEN	59,094	7,831	86,941	11,476
FALL RIVER	8,662	41,781	13,879	75,814
FALMOUTH	0	0	0	0
FREEPORT	1,647	547	2,141	764
GLOUCESTER	17,206	103,963	36,986	216,104
HAMPTON	27,393	11,062	27,288	11,932
HAMPTON BAY	408,225	225,944	226,863	123,057
HARWICHPORT	243	26	841	90
HYANNIS	103	14	358	48
ISLIP	50	20	173	68
JAMESTOWN	0	0	0	0
LITTLE COMPTON	60,734	60,342	54,955	45,630
LONG BEACH	283	56	980	193
MENEMSHA	137	22	474	77
MONTAUK	619,147	338,770	191,638	82,674
MOREHEAD CITY	115	46	400	159
MORICHES	31,172	15,133	58,495	29,523
NANTUCKET	0	0	0	0

NEW BEDFORD	4,596,922	3,057,161	2,003,902	1,387,470
NEW LONDON	273,333	166,851	170,528	85,708
NEW SHOREHAM	5,998	4,614	12,427	10,998
NEWPORT	177,602	160,773	219,187	55,484
NEWPORT NEWS	40,413	7,714	42,981	7,040
NORTH KINGSTOWN	6,012	17,829	14,411	44,701
OCEAN CITY	1,644	428	3,216	808
ORIENTAL	339	142	813	334
OTHER NASSAU	123	120	425	414
OTHER WASHINGTON(COUNTY)	746	486	2,584	1,685
POINT JUDITH	970,922	779,532	407,242	169,347
POINT LOOKOUT	4,591	2,701	7,604	4,907
POINT PLEASANT	142,124	92,041	61,216	62,891
SANDWICH	0	0	0	0
SHINNECOCK	678,485	487,859	244,769	181,403
STONINGTON	165,057	66,856	90,279	34,459
TIVERTON	18,375	30,325	23,482	32,619
VINEYARD HAVEN	0	0	0	0
WANCHESE	2,741	1,040	4,033	1,463
WESTPORT	19,252	13,665	10,888	8,472
WILDWOOD	1,283	182	4,443	632
WOODS HOLE	106	16	366	54

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

Appendix 6 – Sunrise Wind Economic Benefits to Rhode Island

Sunrise Wind | Powered by Ørsted & Eversource

www.sunrisewindny.com

August 3, 2023

VIA E-MAIL
jwillis@crmc.ri.gov
ksloan@crmc.ri.gov

Jeffrey Willis, Executive Director
Kevin A. Sloan, Coastal Policy Analyst
Rhode Island Coastal Resources Management Council
Stedman Government Center
Suite 116, 4808 Tower Hill Road
Wakefield, RI 02879-1900

Subject: **Sunrise Wind, LLC – Docket No. BOEM-2021-0052, CRMC File 2021-09-036**
Sunrise Wind Economic Benefits Summary

Dear Messrs. Willis and Sloan:

Sunrise Wind, LLC (Sunrise Wind) submits the information below regarding the economic benefits that Sunrise Wind anticipates bringing to Rhode Island. Sunrise Wind provides this detailed information for review by the Coastal Resources Management Council (CRMC) pursuant to the Ocean Special Area Management Plan policy requiring CRMC to consider whether there is an overall net benefit to the Rhode Island marine economic sector from Sunrise Wind's development. We respectfully request that CRMC consider the information below in evaluating the Sunrise Wind project's consistency with the Rhode Island enforceable policies as the Council prepares for a public meeting on August 22, 2023.

Specifically, Sunrise Wind anticipates that the following economic benefits will inure to the State of Rhode Island from the development of the Sunrise Wind Project:

- Long-term operation benefits (approximately $120m):
  - Crew Transfer Vessel (CTV)
    - Sunrise Wind requires the use of a CTV to support daily operation.
    - This vessel is planned to be built in, chartered out of, and operated from Rhode Island.
    - The CTV also will require additional use of local port agent services in Quonset.
  - Facilities (office and land lease)
    - Sunrise Wind operations will provide additional activity in existing offices and facilities (including Quonset and Port of Providence).
  - Service Operation Vessel (SOV)
    - Fuel costs to support use of SOV.
- Near-term construction benefits (approximately 40 Full-Time Employees (FTEs) plus an additional estimated $5m):
  - Approximately 40 FTEs are needed to build the CTV at a Rhode Island shipyard.

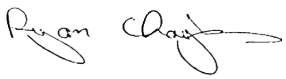
- The amount includes costs for use of a temporary construction base in Rhode Island.

- The amount also includes the loading and storage of Sunrise Wind components at the Port of Providence.
  - Stevedoring gangs, crane operators and port fees.

Sunrise Wind stands to bring approximately $125 million to Rhode Island during the construction and operation of the proposed project, plus approximately 40 full-time construction jobs during the near term. Please note that these economic benefits are attributable to Sunrise Wind and have not previously been accounted for with respect to the South Fork or Revolution Wind projects considered by CRMC.

Thank you for your consideration of this information. Please do not hesitate to contact me at RYACH@orsted.com or (617) 767-6956, if you have any questions or concerns.

Yours sincerely,



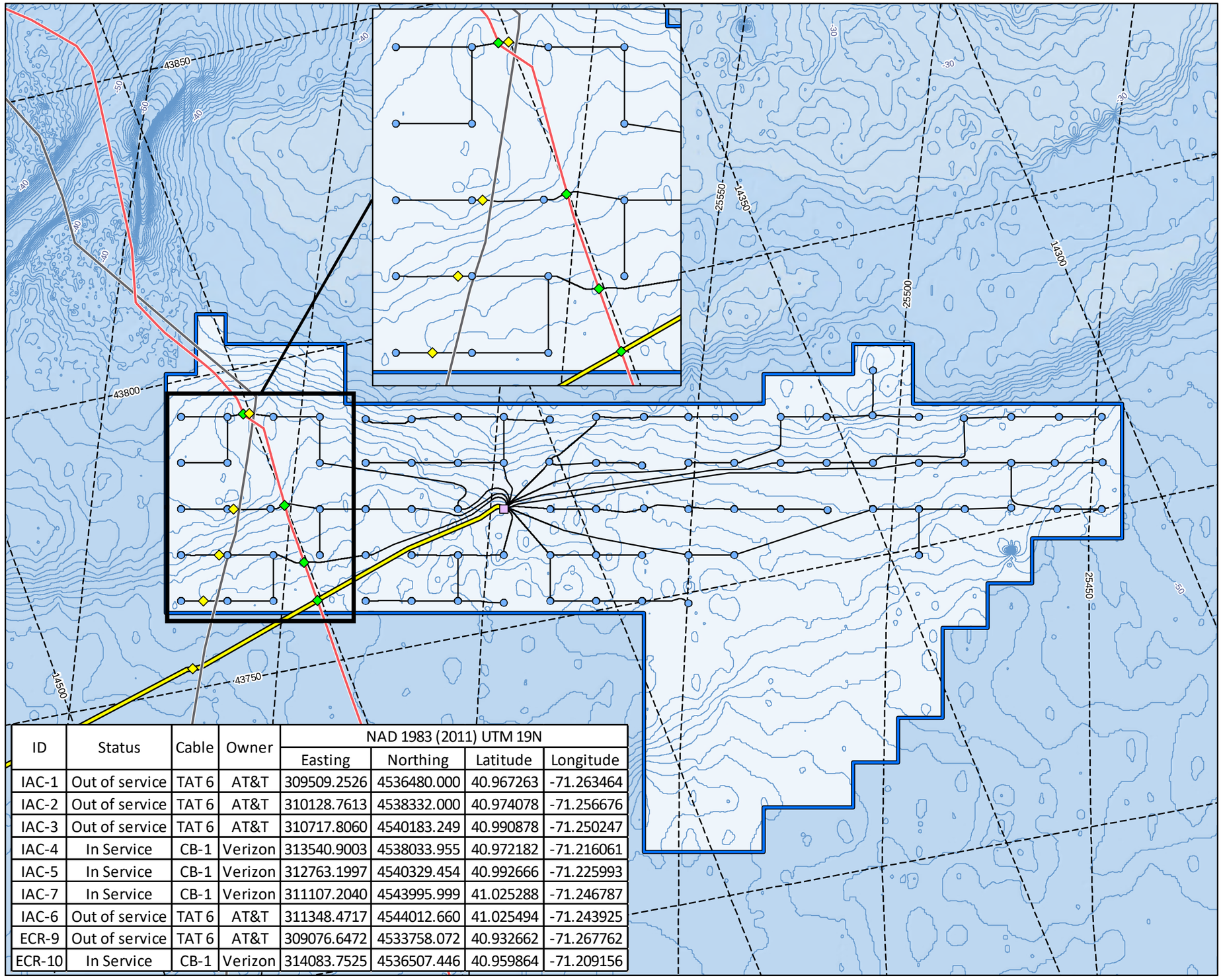
Ryan Chaytors
Program Development Director

Cc: Mike Evans, Permit Manager for Sunrise Wind
Melanie Gearon, Head of Northeast Permitting, Orsted North America
Kenneth Bowes, Vice President, Offshore Wind Siting & Permitting, Eversource
Marvin Bellis, Esq., Eversource
Robin Main, Esq., Hinckley Allen

Appendix 7 – Existing Cables with Indicative WTG and IAC Locations

Indicative SRWF Layout Design
Submarine Cable Crossings

Sunrise Wind | Powered by Ørsted & Eversource



ID	Status	Cable	Owner	NAD 1983 (2011) UTM 19N			
				Easting	Northing	Latitude	Longitude
IAC-1	Out of service	TAT 6	AT&T	309509.2526	4536480.000	40.967263	-71.263464
IAC-2	Out of service	TAT 6	AT&T	310128.7613	4538332.000	40.974078	-71.256676
IAC-3	Out of service	TAT 6	AT&T	310717.8060	4540183.249	40.990878	-71.250247
IAC-4	In Service	CB-1	Verizon	313540.9003	4538033.955	40.972182	-71.216061
IAC-5	In Service	CB-1	Verizon	312763.1997	4540329.454	40.992666	-71.225993
IAC-7	In Service	CB-1	Verizon	311107.2040	4543995.999	41.025288	-71.246787
IAC-6	Out of service	TAT 6	AT&T	311348.4717	4544012.660	41.025494	-71.243925
ECR-9	Out of service	TAT 6	AT&T	309076.6472	4533758.072	40.932662	-71.267762
ECR-10	In Service	CB-1	Verizon	314083.7525	4536507.446	40.959864	-71.209156

Legend

Indicative Cable Crossing
- In Service
- Out of service

Existing Submarine Cable Crossing
- In Service Submarine Cable
- Out of Service Submarine Cable

- Sunrise Wind Farm (SRWF)
- Indicative Turbine Layout (WTG)
- Indicative Offshore Converter Station (OCS–DC)
- Indicative Inter-Array Cable (IAC)
- Sunrise Wind Export Cable (SRWEC–OCS)
- Sunrise Wind Export Cable (SRWEC–NYS)
- LORAN Line
- 1 m Bathymetric Contour

Sources
Base map: ESRI World Ocean Base Map

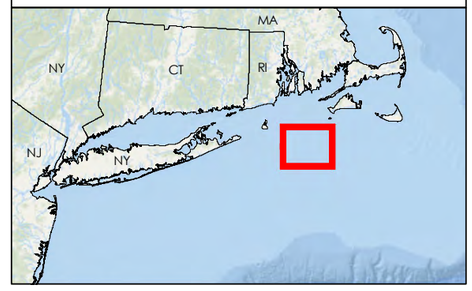
Date	07/31/2023
Project Number	2028113199
Prepared By	GC
Reviewed By	JK

0 2.5 miles
0 2.5 nm
0 4 km

N

Scale at 11x17: 1:158,400
NAD 1983 2011 UTM Zone 19N

REFERENCE MAP



V:\1956\active_Task Owner and other Non-BC\1956.Jobs\2028113199\03_data\gis_cad\gis\MXD\sLocation\2023\2028113199_LeaseArea_CableCrossings.mxd Revised: 2023-08-01 By: gcarpentier

Appendix 8 – Sunrise Response to CRMC Request for Information (June 13, 2023)

Sunrise Wind Farm Construction and Operations Plan

REQUEST FOR INFORMATION, May 25, 2023
SRW Response June 13, 2023

1. Boulder Relocation
   - What is your current boulder relocation plan for cable/foundation installation?
   - CRMC's policy goal is to preserve benthic habits and the resources and users that are dependent on those habitats.
   - The boulder relocation process's first objective should be to avoid impacts to EFH/sensitive areas.
   - Boulders should be avoided (micro-sited around) to the maximum extent possible.
   - Boulders that must be moved should be relocated to areas with similar seabed types/conditions within the cable corridor.
   - Boulders that must be moved but cannot be grouped or placed in similar seabed conditions should not be placed in sensitive or complex hard bottom habitats.
   - Boulders should be grouped together to prevent new hangs for fishers.

Sunrise Wind Response:
Sunrise Wind acknowledges CRMC's policy noted above. Before getting into the details of boulder relocation, Sunrise Wind wants to describe the scope of the boulders associated with its footprint. Boulders are sparse in the Sunrise Wind Farm (SRWF) area and export cable route (SRWEC).

Within the SRWF, boulder fields are predominantly in the northern area shown in the figure below.[1] The highest concentration of boulder fields is found in the northwest portion of the SRWF, where there will be no wind turbine generators (WTGs). Smaller areas of lower density boulder fields are further to the southeast.

Along the SRWEC, boulder fields were only identified in the nearshore area of the SRWEC-NYS (i.e., only in NYS waters), predominately made up of smaller cobble sized boulders. Boulder fields are not encountered anywhere else along the SRWEC, although individual boulders were identified in some locations.

[1] Boulders are defined in the MSIR as stones of 0.5 meter diameter or greater; boulder fields are defined as 20 boulders or more within 100 m x 100 m.

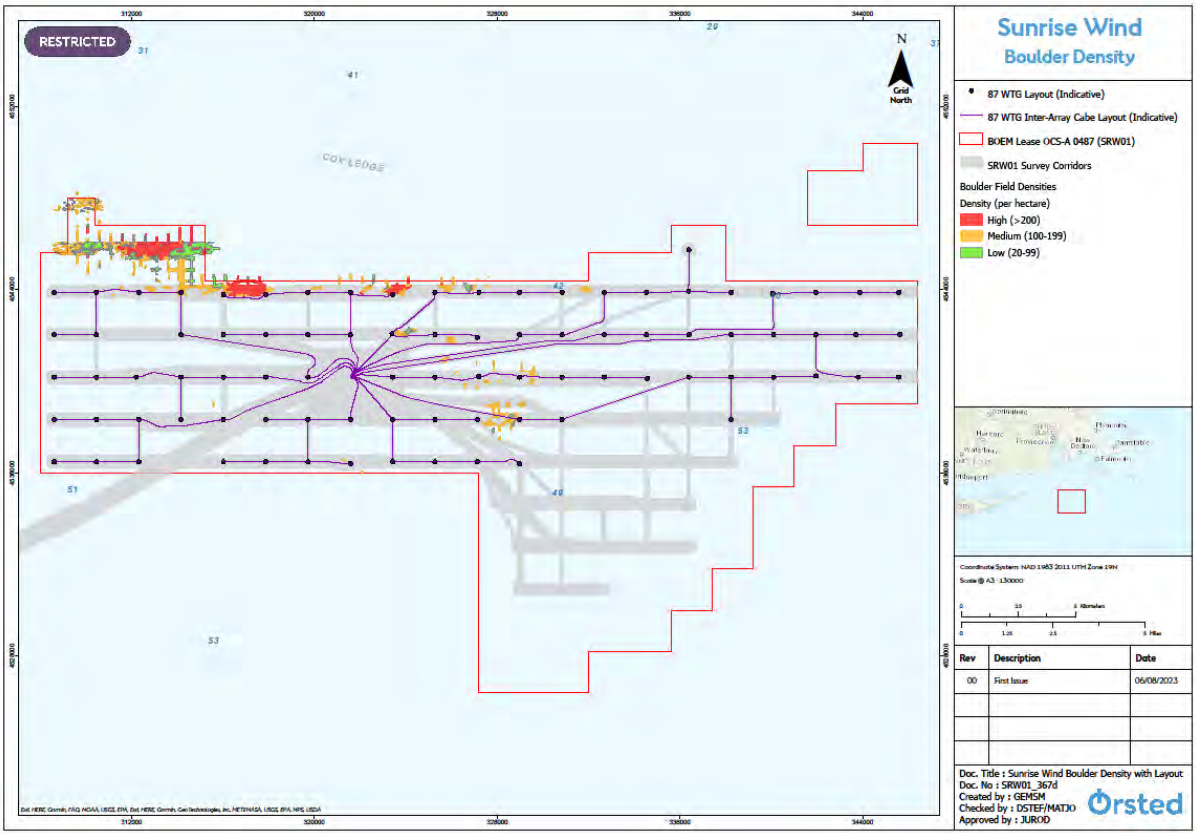


Figure 1: Boulder fields within SRWF based on surveys

Of the 87 potential WTG positions being considered, investigations to date show boulders do not exist at 17 of the locations. In the remaining 70 positions, a majority (49) have fewer than 10 boulders in the 220 m (722 ft) area associated with the WTG, so minimal relocation would be required. Boulder fields are not encountered along the SRWEC-OCS, although individual boulders were identified in some locations. At the OCS-DC and WTG locations, Sunrise Wind proposes to relocate any boulder within 0.5 m (1.6 ft) and 2.4 m (7.9 ft) in diameter within the boulder clearance area to the nearest location outside of the clearance area. Along the SRWEC, boulders within 0.3 m (1 ft) to 2 m (6.6. ft) in diameter may be relocated.

Preliminary micrositing of the foundation locations, IAC routes, and SRWEC route has been completed to minimize impacts to sensitive benthic habitats and archaeological resources (e.g., shipwrecks and ancient submerged landforms), to avoid potential munitions and explosives of concern (pMEC), and to maximize the maneuvering and setup space available for jack-up vessels (utilized during both during construction and operation) and reducing cable length.

Sunrise Wind is continually assessing technical feasibility issues that may be raised by the installation and operation and maintenance teams. Sunrise Wind is committed to avoiding or minimizing impacts to complex habitats and minimizing required boulder relocation/clearance, as practicable. Boulder relocation will be further refined with the additional micrositing of foundation locations, IAC route engineering, and SRWEC routing as Sunrise Wind continues to review geophysical and geotechnical survey results.

Boulder relocation is described in COP Section 3.3.3.4 and 3.3.7.2. Given the low number of boulders overall, Sunrise Wind will relocate boulders from the installation footprint by means of a boulder grab. A boulder plow was included as a potential methodology in the Project Design Envelope in the COP but is not currently anticipated to be used for the Project given the limited number of boulders.

An example of Sunrise Wind's efforts to reduce impacts to complex habitat and boulder relocation is as follows: one of the WTG positions was microsited 100 m (328 ft) south to reduce impacts to complex habitat and reduce the boulder relocation/clearance required. The microsited position largely reduces the extent to which boulders would be removed from a boulder field to the north.

The SRWEC and IAC will be installed in a 30 m (98 ft) wide corridor. Boulders will typically be relocated just outside of the installation corridor with the boulder grab. There is a very limited number of boulders located within the SRWEC corridor. Sunrise Wind estimates that there are less than 15 boulders along the 99.4 mi (160 km) SRWEC-OCS corridor. As noted above, micrositing the WTGs and IAC segments in some areas will avoid the dense boulder field in the north of the SRWF, leaving only a few boulders to be moved within the installation corridor. Further SRWEC and IAC routing will minimize the boulder relocation/clearance requirement and installation footprint across complex habitat.

2. Cable Burial

- What is the target burial depth for your export and inter-array cables?

- Have you selected a cable contractor, and will you be utilizing simultaneous lay and bury methods?

- Please discuss how your project's Cable Burial Risk Assessment (CBRA) analyzes various risk factors including cable burial depth needed to ensure gear strikes are avoided. Larger vessels have expressed concern that their gear may strike cables if not buried sufficiently.

- Please provide maps with Loran Lines depicting the most recent WTG, inter-array cable, and export cable layout in relation to complex bottom habitat areas. (Large-grained sediments, coble stone, boulders/boulder fields, glacial moraine, glauconite sands, etc.

Sunrise Wind Response:

The requested figures are provided as an attachment to this response.

Sunrise Wind has selected Jan de Nul Luxembourg SA to install the Sunrise Wind Export Cable (SRWEC), and Boskalis Subsea Cables BV to install the Inter-Array Cables (IAC).

Cable burial depths will be informed by the cable burial design documents that will include the evaluation of existing threats and future risks at the SRWF and SRWEC. The Cable Burial Plan will analyze a range of target depths of 3 to 7 ft (1 to 2 m), which is the Project Design Envelope in the COP. Although the COP indicates that burial of the SRWEC will typically target a depth of 3 to 7 ft (1 to 2 m), Sunrise Wind does not anticipate the target burial depth to be less than 4 feet (1.2 m) along the SRWEC-OCS or IAC, which is consistent with the target burial depths proposed for the South Fork Wind Project and the Revolution Wind Project. The target burial depth for the SRWEC and IAC will be determined based on an assessment of seafloor conditions, seafloor mobility, the risk of interaction with external hazards such as fishing gear and vessel anchors, and a site-specific Cable Burial Risk Assessment (CBRA).

The Cable Burial Risk Assessment (CBRA) will be submitted to BOEM with the Fabrication and Installation Report (FIR). The aim of the CBRA is to evaluate potential risks to the cable or to third parties and provide recommendations for mitigation from hazards such as fishing, dredging and military activity.

The basis of a risk assessment for a submarine cable relies on identifying the potential hazards, associated risks and evaluating the level of protection that may be afforded to the cable by its armoring (internal and/or external), burial beneath the seabed and any other means, such as rock dumping or concrete mattressing.

The most reliable and cost-effective form of cable protection is generally recognized to be ensuring no interaction between the cable and the identified hazards. When routing the cable away from such hazards is not practical, burial below the seabed is the most effective protection method. The principles of the methodology of the CBRA are that following the identification of the initial cable routes, the following steps are taken:

- Seabed conditions are assessed.
- Threats/hazards are identified and assessed.
- Identified hazards to cables are assessed in more detail either through a probabilistic approach, where applicable and/or data quality permits, or through a more qualitative approach.

- Threatline depths are determined for relevant anthropogenic hazards, as they define the depth of penetration of these hazards into the relevant ground conditions.
- Return periods for anchor interaction risks at different depths of cable lowering are determined based on the shipping data and ground conditions.

Final burial requirements, including recommendations from the CBRA, allowance for seabed mobility and accounting for any applicable third-party requirements, will be documented in Sunrise Wind's Cable Burial Plan. The Cable Burial Plan will also be submitted with the FIR.

3. Number of WTGs
   - How many WTGs does your project intend to utilize? Size or range being considered?

   - What company is supplying the project's WTGs? (Siemens Gamesa, GE, Vestas, etc.

Sunrise Wind Response:
Sunrise Wind is planning to install up to 84 WTGs at up to 87 potential locations.

Sunrise Wind has selected the Siemens Gamesa Renewable Energy SG DD-200 11 MW turbine as the machine that will be installed for the Project.

4. Release of Project Information to Fishing Industry

- What information will be provided to the fishing community during the construction, operation/maintenance, and decommissioning phases? (i.e., boulder locations, secondary cable protection, scour protection, foundation locations, etc.) Please explain.

- How will information be distributed to the fishing community and what method(s) will be used to deliver information?

- Information should be released at reasonable intervals during the construction phase of the project so to minimize risk to fishers and allow them to operate within the lease area to the extent possible.

Sunrise Wind Response:

Sunrise Wind submitted a Fisheries Communication and Outreach Plan as Appendix B of its COP. This Fisheries Communication and Outreach Plan was formulated to gather local knowledge from the region's fishermen and to establish open and reliable communication with the fishing industry. The intent of the Plan is to include mariners, commercial, recreational, and for-hire fisherman in all applicable Project-related information. The Plan provide details about the types of information provided, the methods used to deliver the information, and the timing of delivery (as applicable).

Sunrise Wind has established an experienced team of Fisheries Liaisons and Fisheries Representatives to facilitate a two-way process of communication through individual outreach via email, text message, or in person, and that also includes, but is not limited to, public presentations, listening sessions, Notices to Mariners, and updates to websites and social media. Sunrise Wind aims, where practicable, to mitigate and reduce potential impacts to fishing activities as outlined in the Fisheries Communication and Outreach Plan.

Ørsted is committed to maintaining a strong working relationship with all commercial and recreational fishermen who may be affected by a wind farm or wind farm activities in and around a lease area. Ørsted recognizes that fishermen will be affected by offshore wind development. These Plans do not claim that all conflicts can be resolved to the satisfaction of all parties or that a consensus can be reached on every offshore wind development issue. Nonetheless, Ørsted believes that open, honest, and continuous communication between the offshore wind and fishing industries is essential to managing conflicts and maintaining a collaborative working relationship with the fishing industry.

5. Communication between Construction/Guard (scout) Vessels and Fishers

- There have been communication breakdowns between hired scout vessels and developers resulting in frustration, lost effort/catch, and additional distrust in the fishing community. What tangible actions are being taken to address these issues? How will similar issues that result in a negative impact to fishers (lost effort/catch) be addressed in the compensation process?

Sunrise Wind Response:

Sunrise Wind expects to continue its productive relationship with the regional fishing community by inviting them to participate in safety/scout activities, and by encouraging our major contractors to hire local fishing vessels as well, instead of using alternate vessels. Sunrise Wind benefits from the authentic voice of local fishermen on the water and is committed to continuing to work with this community as it adapts to new modes of on water work. Where marine users experience any disconnect between what they expect on the water and what a vessel working for Ørsted or Sunrise Wind conveys, we encourage mariners to take the safest course of action and immediately contact Ørsted's robust Marine Affairs team to resolve any concerns.

Ørsted is aware of short duration miscommunications, and Sunrise Wind here is not commenting on any lost catch that may have resulted from the communication breakdown. In light of recent events which were brought to Ørsted's attention, the Ørsted Marine Affairs team has taken the following tangible actions:

1. Reviewed all contractors and internal documents, and made adjustments, including to lines of reporting and consulting to ensure language is in line with permit.

2. Finalized contracting with Quintham, which will help us continue to improve our charting and other Mariners' communications products, which will provide a standardized approach across Vineyard Wind and Ørsted.

3. Marine Affairs met with, personally, contract scout vessel leadership. Marine Affairs has committed to providing a brief to all vessel captains in future as part of their vessel kickoff.

3. Continued production of publicly available resources to support consistent language.

4. Developed a position, soon to be posted, which will in part ensure these issues are closely monitored.

Addressing possible future impacts: Sunrise Wind cannot speculate on possible future impacts, other than to point to our Corporate Gear Claim's process, which contains provisions for both tangible equipment and economic loss, and the state-related direct compensation funds.

Appendix 9 – Sunrise Wind Offer for Compensatory Mitigation

Lisa Turner

From: Jesper Christensen <CHJES@orsted.com>
Sent: Thursday, August 3, 2023 7:52 PM
To: lad0626@aol.com; Marisa Desautel; kerin@desautelesq.com; 'Jeff Willis'; 'Kevin Sloan'; 'Justin Skenyon'
Cc: Ryan Chaytors; Melanie Gearon; Michael Evans; Ross Pearsall; Main, Robin L.; Kenneth Bowes; Bellis, Marvin P
Subject: SRW Compensatory Mitigation Offer

Follow Up Flag: Follow up
Flag Status: Flagged

Dear All,

The Sunrise Wind (SRW) team appreciates the continued discussions with the FAB, its advisors and CRMC staff, and we are pleased to present the following compensatory mitigation offer as we continue working towards an agreement.

The offer is in part based on WHOI's Fisheries Exposure assessment, including a modified baseline recently discussed between WHOI and the FAB's consultant.

SRW recognizes that the FAB has raised certain concerns and that such concerns have been discussed either directly with the FAB and/or its advisors with WHOI or indirectly through CRMC staff. Although we do not believe these concerns have material impacts beyond what has already been addressed by WHOI's assessment, SRW is willing to offer a 50% increase in direct compensation to account for any additional uncertainties.

Compensatory Mitigation

Direct Compensation Fund	$12,280,500
Fisheries Exposure (WHOI)	*$8,187,000*
+ 50% increase	*$4,093,500*

Direct compensation fund includes for hire charter.
Adjusted to 2023$.
Assumes a 5% discount factor.

Coastal Community Fund $300,000

Both funds would be established under the RI Fishermen's Viability Trust and claims processes managed by a third party Technical Assistance Provider.

Recreational Fishing Study $50,000

SRW will fund a study to evaluate level and type of recreational fishing in the SRW lease area up to 5 years.

Navigational Safety and Training $333,333

SRW will make funds available on a voucher basis for equipment updates and training as agreed under SFW and REV.

Total compensation of $12,963,833

Additional Mitigation Efforts

In addition to comprehensive mitigation measures already taken by the Project, SRW will agree to:

- permanently drop 3 WTG positions in the NW corner of the lease area to eliminate impacts to complex habitat,
- microsite around complex habitat to the extent practicable and within technical limitations/feasibility for WTG, IAC, and ECR, and
- provide electronic copies of its monthly discharge monitoring reports (plan to submit on a quarterly basis) and annual biological and thermal monitoring reports and corresponding data related to the OCS-DC under the EPA NPDES permit.

We look forward to discussing this offer in detail over the coming days.

Best regards,
Jesper Christensen
Senior Commercial Project Manager
Commercial Management (NEP, OCW1)
Region Americas

Tel. +16176803270
chjes@orsted.com

Ørsted

Learn more at us.orsted.com

399 Boylston St., 12th Floor
Boston, MA 02116

Appendix 10 – CRMC FAB Counteroffer to Sunrise Wind (August 16, 2023)

COUNTER OFFER

Sunrise Wind Project

FAB Recommendations

Orsted's Compensatory Mitigation Offer

Direct Compensation Fund	$12,280,500
Fisheries Exposure (WHOI)	*$8,187,000*
+ 50% increase	*$4,093,500*

Direct compensation fund includes for hire charter.
Adjusted to 2023$.
Assumes a 5% discount factor.

Coastal Community Fund $300,000

Both funds would be established under the RI Fishermen's Viability Trust and claims processes managed by a third party Technical Assistance Provider.

Recreational Fishing Study $50,000

SRW will fund a study to evaluate level and type of recreational fishing in the SRW lease area up to 5 years.

Navigational Safety and Training $333,333

SRW will make funds available on a voucher basis for equipment updates and training as agreed under SFW and REV.

Total compensation of $12,963,833

Additional Mitigation Efforts

In addition to comprehensive mitigation measures already taken by the Project, SRW will agree to:

•permanently drop 3 WTG positions in the NW corner of the lease area to eliminate impacts to complex habitat,
•microsite around complex habitat to the extent practicable and within technical limitations/feasibility for WTG, IAC, and ECR, and
•provide electronic copies of its monthly discharge monitoring reports (plan to submit on a quarterly basis) and annual biological and thermal monitoring reports and corresponding data related to the OCS-DC under the EPA NPDES permit.

FAB RECOMMENDED COMPENSATION

Fishery	Construction (Cost per Year)	Operations (BOEM Adjustment Period/full 30 years)	Decommissioning	TOTAL
Commercial/ Charter				
Landings	$7,239,284	$50,220,521	$1,523,388	$58,983,193
Safety/Navigation		$129,149,972		$129,149,972
Recreation	$509,421	$1,999,621	$203,762	$2,712,804
TOTALS:				
			GRAND TOTAL =	**$190,845,969**

$2023 Dollars
3% Discount Rate applied

FAB recommendation - Compensatory Mitigation

Direct Compensation Fund $58,983,193
Fisheries Exposure (FAB

Direct compensation fund includes for hire charter & commercial.
Adjusted to 2023$.
Assumes a 3% discount factor.

Coastal Community Fund $300,000

Both funds would be established under the RI Fishermen's Viability Trust and claims processes managed by a third party Technical Assistance Provider.

Recreational Compensation Fund $2,762,804

SRW will fund a $50,000 study to evaluate level and type of recreational fishing in the SRW lease area up to 5 years. SRW will directly compensate recreational fishing fleet for loss of use.

Navigational Safety and Training $129,149,972

SRW will make funds available for commercial fisherman to add a ½ FTE (qualified vessel operators) for 146 boats, to their crew, in order to navigate in, through and around SRW.

Total compensation of $190,845,969

Additional Mitigation Efforts

In addition to comprehensive mitigation measures already taken by the Project, SRW will agree to:
*pay construction per diem for each day that construction continues beyond one year
•permanently drop 3 WTG positions in the NW corner of the lease area to eliminate impacts to complex habitat,
•microsite around complex habitat to the extent practicable and within technical limitations/feasibility for WTG, IAC, and ECR, and
•provide electronic copies of its monthly discharge monitoring reports (plan to submit on a quarterly basis) and annual biological and thermal monitoring reports and corresponding data related to the OCS-DC under the EPA NPDES permit.

ADDITIONAL ISSUES

See BOEM Recommendations.

- WHOI model incorrectly calculates the discount rate (double counted).
- Construction compensation should paid out per day after one year.
- Time needed for fisherman to adjust – BOEM recommends 5 years
- EMF impacts on Lobster/crab foraging and Haddock & Scallop Larvae
- Cable heat impacts to sediments – cannot bury deeper than 4’
- Improper burial depths -
- Converter Station cooling water/impingement/entrainment ecological impacts
- Continuous Noise Impacts

ADDED VESSEL OPERATOR

- 2022 NAS report states that “no standard approach to active radar deployment in a WTG environment is available.”
- Training existing crew without replacement is not an acceptable alternative to this, unless that crew member becomes officially certified in navigational expertise, and another crew member is hired to relieve the new captain of their previous duties on deck.
- There is not a surplus of vessel operators in Rhode Island, or in the US in general, therefore to meet the needs of the RI fleets to work within the wind farms
- A vocational program to train and credential additional vessel operators would be required.
- An adjustment period is required to make these changes (see BOEM Recommendations)