

<p style="text-align: center;">UNITED STATES DEPARTMENT OF THE INTERIOR BUREAU OF OCEAN ENERGY MANAGEMENT, REGULATION AND ENFORCEMENT</p> <p style="text-align: center;"><b>COMMERCIAL LEASE OF SUBMERGED LANDS FOR RENEWABLE ENERGY DEVELOPMENT ON THE OUTER CONTINENTAL SHELF</b></p> <p><i>Paperwork Reduction Act of 1995 statement: This form does not constitute an information collection as defined by 44 U.S.C. 3501 et seq., and therefore does not require approval by the Office of Management and Budget.</i></p>	Office  Herndon, VA	Renewable Energy Lease Number OCS-A 0478
	Cash Bonus and Acquisition Fee: N/A	Resource Type  Wind
	Effective Date  <b>NOV 01 2010</b>	OPD Providence NK19-07 Block Number(s) Whole Blocks: 6530 Part of Blocks: 6479, 6480, 6481, 6529, 6531, 6532, 6579, 6580, 6581, 6582

This lease is effective on the first day of the month following the date it is signed by the Lessor ("Effective Date") and will continue until the lease terminates as set forth in Addendum "B," by and between the United States of America, ("Lessor") acting through the Bureau of Ocean Energy Management, Regulation and Enforcement ("BOEMRE"), its authorized officer, and

Lessee	Interest Held
Cape Wind Associates, LLC	100 percent

("Lessee"). In consideration of any cash payment heretofore made by the Lessee to the Lessor and in consideration of the promises, terms, conditions, covenants, and stipulations contained herein and attached hereto, the Lessee and Lessor agree as follows:

**Section 1: Statutes and Regulations.**

This lease is issued pursuant to the Section 8(p) of the Outer Continental Shelf Lands Act; 43 U.S.C. 1331 *et seq.*, as amended ("the Act"). This lease is subject to the Act, and regulations promulgated pursuant to the Act including but not limited to 30 CFR Part 285 as well as other statutes and regulations in existence on the Effective Date. The Lessee shall be fully subject to applicable BOEMRE offshore renewable energy and alternate use regulations as published in Title 30 of the Code of Federal Regulations on April 29, 2009 to the extent such regulations do not expressly conflict with the terms, conditions and stipulations of the lease. Where the lease terms conflict with the regulations, the Lessee shall be governed by the terms of the lease.

This lease is also subject to applicable statutes hereafter enacted and regulations hereafter promulgated, except to the extent they are inconsistent with an express provision hereof. Notwithstanding the requirements of this section or any regulation, pursuant to section 388(d) of the Energy Policy Act of 2005 (EPA 2005) (Pub. L. 109-58) the Lessee is not

required to resubmit any document submitted to, or obtain reauthorization of any action that was previously authorized by the U.S. Army Corps of Engineers (USACE) or other relevant agency prior to the date of the enactment of EAct 2005 in relation to the Lessee's Cape Wind energy project. Specifically, notwithstanding the provisions of the regulations, the Lessee is not required to submit a site assessment plan (SAP), nor is a SAP a prerequisite for any requirement to which the Lessee may be subject. Documents required to be included in a SAP were submitted by the Lessee to the USACE and other agencies having jurisdiction for approval before enactment of EAct 2005. The Lessee must fulfill the requirements for a construction and operations plan (COP) within the five year site assessment term of this lease.

## **Section 2: Rights of the Lessee.**

- (a) The Lessor hereby grants and leases to the Lessee the exclusive right and privilege to conduct activities further described herein within the leased area, as identified in Addendum "A," attached hereto and made a part hereof, subject to the terms and conditions of this lease, including Addenda "B" and "C," and applicable laws and regulations.
- (b) The rights granted the Lessee herein are limited to those activities described in this lease. This lease shall not authorize the Lessee to conduct activities on the Outer Continental Shelf (OCS) relating to or associated with the exploration for, or development or production of, oil, gas, other seabed minerals, or renewable energy resources other than those identified in this lease.
- (c) The rights and privileges of the Lessee are subject to Lessor review and approval of all plans and reports required by applicable regulations. Prior to commencing any activity within the leased area, Lessee must obtain approval for such activities from the Lessor. The Lessor reserves the right to approve, disapprove, or approve with modifications such plans as provided in applicable regulations.

## **Section 3: Reservations to Lessor.**

All rights in the leased area not expressly granted to the Lessee by the Act, applicable regulations, or this lease are hereby reserved to the Lessor, including but not limited to the right to suspend Lessee's operations in accordance with the national security and defense provisions of section 1341 of the Act. The Lessor reserves the right to authorize other uses within the leased area that will not unreasonably interfere with activities authorized under this lease.

## **Section 4: Payments.**

- (a) The Lessee shall make all rent payments as specified in the applicable BOEMRE regulations, unless otherwise specified in Addendum "B".
- (b) The Lessee shall make all operating fee payments in accordance with applicable BOEMRE regulations, as specified in Addendum "B".

## **Section 5: Plans.**

The Lessee shall conduct activities authorized by this lease in accordance with plans approved by Lessor.

## **Section 6: Associated Project Easements.**

This lease acknowledges the Lessee's right to obtain from Lessor one or more easement(s) for the purpose of installing gathering, transmission, and distribution cables, pipelines, and related appurtenances on the OCS as necessary for the full enjoyment of the lease. Such project easements will be granted by the Lessor in accordance with applicable law and regulations upon approval of associated plans in which the Lessee has demonstrated a need for such easements. Such easements shall be in a location acceptable to Lessor, and subject to such conditions as Lessor may require.

*Project easement* means an easement to which, upon approval of your COP you are entitled as part of the lease for the purpose of installing, gathering, transmission, and distribution cables, pipelines, and appurtenances on the OCS as necessary for the full enjoyment of the lease.

## **Section 7: Conduct of Activities.**

The Lessee agrees to conduct all activities in the leased area in accordance with all applicable laws and regulations.

The Lessee further agrees that no activities authorized by this lease will be carried out in a manner that:

- (a) could interfere with or endanger other activities or operations carried out under any lease issued or maintained pursuant to the Act, or under any other license or approval from any Federal agency granted prior to the issuance of this lease, or that could unreasonably interfere with or endanger such activities or operations approved subsequent to the issuance of this lease;
- (b) could cause any undue harm or damage to the environment;
- (c) could create hazardous or unsafe conditions; or
- (d) could adversely affect sites, structures, or objects of historical, cultural, or archaeological significance, without notice to and direction from the Lessor on how to proceed.

## **Section 8: Violations, Suspensions, Cancellations, and Remedies in Case of Default.**

If the Lessee fails to comply with any of the provisions of the Act, applicable regulations, the terms of this lease, including associated Addenda "A", "B" and "C", or orders of the BOEMRE, the Lessor may exercise any of the remedies that are provided under the Act and

applicable regulations, including, without limitation, issuance of cessation of operations orders, suspension or cancellation of the lease, and/or the imposition of penalties.

Non-enforcement by the Lessor of a remedy for any particular violation of the provisions of the Act, applicable regulations, or the terms of this lease shall not prevent the Lessor from exercising any remedy, including cancellation of this lease, for any other violation or for the same violation occurring at any other time.

### **Section 9: Indemnification.**

The Lessee shall indemnify the Lessor for, and hold the Lessor harmless from, any claim, including claims for loss or damage to natural resources, or for the release of any petroleum or any Hazardous Materials or other environmental injury of any kind or other damage to property, injury to persons or costs or expenses incurred by the Lessor caused by or resulting from any of Lessee's operation or activities on the leased areas or arising out of any activities conducted by or on behalf of the Lessee or its employees, contractors (including Operator, if applicable), subcontractors, or their employees, under this lease, *provided*, that Lessee shall not be liable for any losses or damages proximately caused by the activities of the Lessor or Lessor's employees, contractors, subcontractors, or their employees. The Lessee shall pay the Lessor for damage, cost, or expense due and pursuant to this Section 9 within 90 days after written demand by the Lessor. Nothing in this lease shall be construed to waive any liability or relieve Lessee from any penalties, sanctions, or claims that would otherwise apply by statute, regulation, operation of law, or imposed by the Lessor or other government agency acting under such laws.

"Hazardous Material" means

1. Any substance or material defined as hazardous, a pollutant, or a contaminant under CERCLA at 42 U.S.C. 9601(14) and (33);
2. Any regulated substance as defined by the Resource Conservation and Recovery Act at 42 U.S.C. 6991 whether or not contained in or released from underground storage tanks and any hazardous waste regulated under that Act pursuant to 42 U.S.C. 6921, *et seq.*;
3. Oil, as defined by the Clean Water Act at 33 U.S.C. 1321(a) and the Oil Pollution Act at 33 U.S.C. 2701(23); or
4. Other substances that applicable Federal, state, tribal, or local law define and regulated as "hazardous."

### **Section 10: Financial Assurance.**

The Lessee shall provide and maintain at all times a surety bond(s) or other form(s) of financial assurance approved by the Lessor in the amount specified in Addendum "B". If, at any time during the term of this lease, the Lessor requires additional financial assurance, then within ninety (90) days after receipt of Lessor's notice of such proposed adjustment and an opportunity to comment thereon, the Lessee shall furnish the amount of additional financial assurance as the Lessor may require in a form acceptable to Lessor.

### **Section 11: Assignment or Transfer of Lease.**

This lease may not be assigned or transferred in whole or in part without written approval of the Lessor. The Lessor reserves the right, in its sole discretion, to deny approval of the Lessee's application to transfer or assign all or part of this lease. The assignment will be effective on the date the Lessor approves the Lessee's application. Any assignment made in contravention of this Section 11 is void.

### **Section 12: Relinquishment of Lease.**

The Lessee may relinquish this entire lease or any officially designated subdivision thereof by filing with the appropriate office of the Lessor a written relinquishment application. No relinquishment of this lease or any portion thereof shall relieve the Lessee or its surety of the obligations accrued hereunder, including but not limited to, the responsibility to remove property and restore the leased area pursuant to Section 13 of this Lease and applicable regulations.

### **Section 13: Removal of Property and Restoration of the Leased Area on Termination of Lease.**

The Lessee shall remove or decommission all facilities, projects, cables, pipelines, and obstructions and clear the seafloor of all obstructions created by activities on the leased area, including any project easements(s) within two years following lease termination, whether by expiration, cancellation, contraction, or relinquishment, in accordance with the Addenda and applicable regulations.

### **Section 14: Safety Requirements.**

The Lessee shall:

- a. maintain all places of employment authorized under this lease in compliance with occupational safety and health standards and, in addition, free from recognized hazards to employees of the Lessee or of any contractor or subcontractor operating under this lease;
- b. maintain all operations within the leased area in compliance with regulations and orders intended to protect persons, property and the environment on the OCS; and
- c. allow prompt access, at the site of any operation subject to safety regulations, to any inspector authorized by the BOEMRE or other Federal agency having jurisdiction and shall provide any requested documents and records which are pertinent to occupational or public health, safety, or environmental protection.

### **Section 15: Debarment Compliance.**

The Lessee shall comply with the Department of the Interior's non-procurement debarment and suspension regulations as set forth in 2 CFR Parts 180 and 1400 and shall

communicate the requirement to comply with these regulations to persons with whom it does business related to this lease by including this requirement in all relevant contracts and transactions.

**Section 16: Notices.**

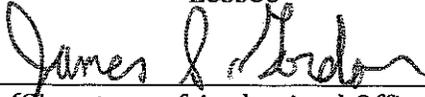
All notices or reports provided by the Lessee under the terms of this lease shall be in writing, except as provided herein. Written notices shall be delivered to the Lease Representative electronically, by hand, by facsimile, or by United States first class mail, adequate postage prepaid, to the specific persons listed in Addendum "A". Any party's address may be changed from time-to-time by such party giving notice as provided above. Until notice of any change of address is delivered as provided above, the last recorded address of either party shall be deemed the address for all notices required under this lease. For all operational matters, notices shall be provided to the party's Operations Representative as well as the Lease Representative.

**Section 17: Severability Clause.**

If any provision of this lease is held unenforceable, then such provision will be modified to reflect the parties' intention. All remaining provisions of this lease shall remain in full force and effect.

Cape Wind Associates, LLC

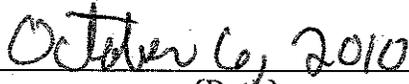
Lessee

  
(Signature of Authorized Officer)

James S. Gordon  
(Name of Signatory)

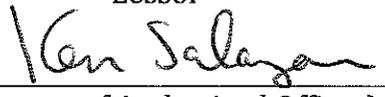
Manager, EMI Cape, LLC  
Member and Manager of Cape Wind  
Associates, LLC

(Title)

  
(Date)

The United States of America

Lessor

  
(Signature of Authorized Officer)

Ken Salazar  
(Name of Signatory)

Secretary of the Interior

(Title)  
OCT 6 2010

(Date)

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT, REGULATION AND ENFORCEMENT

**ADDENDUM "A"**

DESCRIPTION OF LEASED AREA AND LEASE ACTIVITIES

Lease Number OCS-A 0478

I. Lessor and Lessee Contact Information

(a) Lessor's Contact Information

	<b>Lease Representative</b>	<b>Operations Representative</b>
Name	Robert LaBelle	Same as Lease Representative
Title	Acting Associate Director of Offshore Energy and Minerals Management	
Address	U.S. Department of the Interior Bureau of Ocean Energy Management, Regulation and Enforcement 1849 C Street, NW (MS 5438) Washington, D.C. 20240-0001	
Phone	703-787-1700	
Fax		
Email		

(b) Lessee's Contact Information

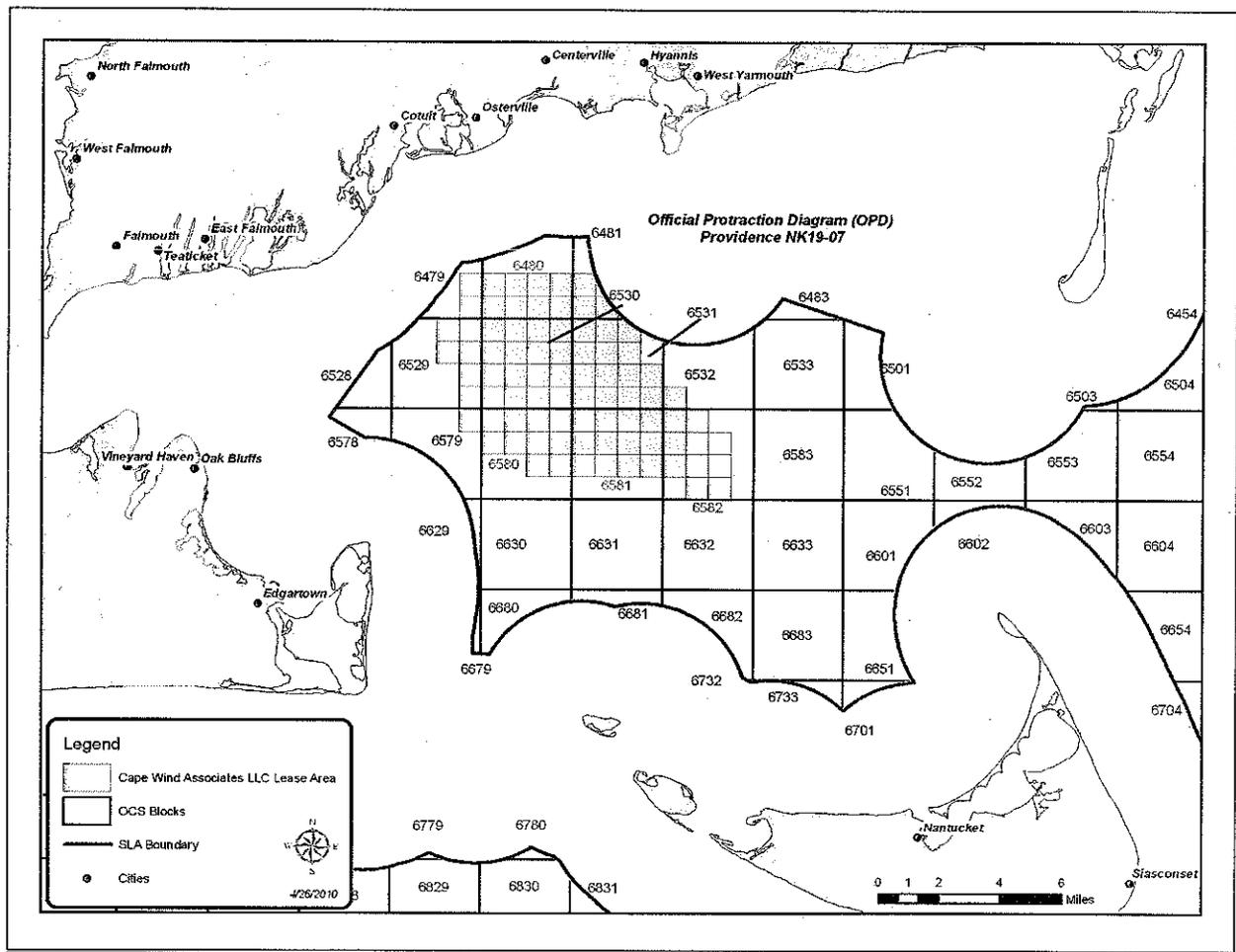
	<b>Lease Representative</b>	<b>Operations Representative</b>
Name	Craig Olmsted	Same as Lease Representative
Title	Vice President, Projects	
Address	Cape Wind Associates, LLC 75 Arlington St., Suite 704 Boston, MA 02116	
Phone	617-904-3100 x119	
Fax	617-904-3109	
Email	colmsted@emienergy.com	

II. Description of Leased Area

For the purposes of these calculations, the acreage of a full block is 5,693.307.  
The total acreage of the project area is 29,425.18.

The following blocks or portions of blocks lying within Official Protraction Diagram Providence NK19-07, depicted on the map attached and comprising 29,425.18 acres, more or less.

- 1) Block 6479, E1/2 of SE1/4
- 2) Block 6480, S1/2
- 3) Block 6481, that portion of the SW1/4 lying seaward of the Submerged Lands Act Boundary
- 4) Block 6529, NE1/4; E1/2 of SE1/4
- 5) Block 6530, all of block
- 6) Block 6531, NW1/4; S1/2; that portion of the W1/2 of NE1/4 lying seaward of the Submerged Lands Act Boundary
- 7) Block 6532, SW1/4 of SW1/4
- 8) Block 6579, NE1/4 of NE1/4
- 9) Block 6580, N1/2; N1/2 of SE1/4
- 10) Block 6581, N1/2; N1/2 of S1/2
- 11) Block 6582, NW1/4; SW1/4 of NE1/4; N1/2 of SW1/4; SE1/4 of SW1/4; W1/2 of SE1/4



III. Renewable Energy Resource

Wind

IV. Description of the Project

130 3.6 MW wind turbine generators, with monopole foundations, located in a grid pattern on the OCS in the leased area on and near Horseshoe Shoals in Nantucket Sound, as well as an electric service platform, inner array cables, and two transmission cables.

V. Description of Project Easement

A description of the project easement and related activities authorized under this lease as of the Lease Issuance Date is included below:

Lessee may request project easements if necessary for the full enjoyment of this lease. Lessee has not indicated that the proposed project will require a project easement.

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT, REGULATION AND ENFORCEMENT

**ADDENDUM "B"**

LEASE TERM AND FINANCIAL SCHEDULE

Lease Number OCS-A 0478

I. Lease Term

The duration of each term of the lease is described below. The terms may be extended or otherwise modified in accordance with applicable BOEMRE regulations.

<b>Lease Term:</b>	<b>Duration:</b>
Preliminary Term	0 years
Site Assessment Term	5 years
Operations Term	28 years

**Renewal:** Lessee may request renewal of the operations term of this lease, in accordance with applicable BOEMRE regulations. Lessor, at its discretion, may approve a renewal request to conduct substantially similar activities as were originally authorized under this lease. Lessor will not approve a renewal request that involves development of a type of renewable energy not originally authorized in the lease. Lessor may revise or adjust payment terms of the original lease, as a condition of lease renewal.

The Site Assessment Term begins on the Effective Date of this lease. The Operations Term begins on the date that the Lessor approves Lessee's COP.

II. Definitions

"Lease Issuance Date" refers to the date on which this lease has been signed by *both* Lessee and Lessor.

"Lease Anniversary" refers to the anniversary of the Effective Date of the lease.

"End Date" refers to the earlier of a) the last calendar day of the last month of the Operations Term; or b) the date on which the lease terminates in the event of a lease termination.

"Commercial Operations" shall mean the generation of electricity or other energy product for commercial use, sale, or distribution on a commercial lease.

“Commercial Operation Date,” or “COD,” refers to the date on which the Lessee first begins Commercial Operations on the lease, excluding electricity generated for the purposes of on-site test operations.

“COD Anniversary” refers to the calendar day of the COD, *e.g.*, if COD is May 15, 2013, the COD Anniversary is May 15 in every subsequent year until the end of the Operations Term. If the COD falls on February 29<sup>th</sup> during a leap year the COD Anniversary will be March 1<sup>st</sup>.

“Delivery Point” is the meter identified in the COP associated with the “Point of Change in Ownership” where electric power for sale is delivered into the “Administered Transmission System” pursuant to the Lessee’s Standard Large Generator Interconnection Agreement with ISO New England Inc.

An individual wind generation turbine is said to be “available for Commercial Operations” on or after the first day that it engages in Commercial Operations on the lease; and to be no longer available for Commercial Operations on or after the day when it is permanently decommissioned. These dates are determined per the COP.

### III. Payments

(a) **Rent.** The Lessee shall pay rent as described below:

- Acres in Project Area: 29,426 (rounded up from 29,425.18)
- Annual Rental Rate: \$3.00 per acre
- Rental Fee for entire project area:  $\$3.00 \times 29,426 = \$88,278$

The first year’s rent payment of \$88,278 is due within 45 days of the Lease Issuance Date. Rent for the entire leased area for the next year and for each subsequent year is due on or before each Lease Anniversary through the lease year in which the COD occurs. The last rent payment prior to the COD, or prior to the lease End Date in the event that the lease terminates prior to the COD, shall represent the final rent payment. The final rent payment is payable for the full year and shall not be prorated to the COD. The first year’s rent and subsequent rent payments must be made as required by the provisions set forth in 30 CFR § 218.51. Late rent payments shall be charged interest in accordance with 30 CFR § 218.54.

#### (1) **Project Easement.**

The Lessee has not requested a project easement. If Lessee requests a project easement and receives approval for such an easement in accordance with applicable BOEMRE regulations, additional rent payment shall be required and terms and rates shall be determined in accordance with applicable regulations at the time of issuance.

(2) **Relinquishment.**

If Lessee submits an application for relinquishment of a portion of the leased area within the first 45 days following the Lease Issuance Date, and the Lessor approves that application, no rent payment shall be due on that relinquished portion of the leased area. Later relinquishments of any leased area shall reduce the Lessee's rent payments due the year following the Lessor's approval of the relinquishment.

(b) **Operating Fee.** The Lessee shall pay an operating fee as described below:

(1) **Initial Operating Fee Payment.** The Lessee shall pay an initial operating fee within 45 days after the COD. The initial operating fee payment covers the first year of Commercial Operations on the lease and shall be calculated in accordance with subsection (4) below, using an operating fee rate of 0.02 and a capacity factor of 0.374 for the initial period (Performance Period 0 in Table 2 below).

(2) **Annual Operating Fee Payments.** The Lessee shall pay the operating fee for each subsequent year of Commercial Operations on or before each Lease Anniversary following the formula in subsection (4) below. The Lessee shall calculate each operating fee annually subsequent to the initial operating fee payment using an operating fee rate of 0.02 through the 15<sup>th</sup> year of Commercial Operations. Starting in the 16<sup>th</sup> year of Commercial Operations the operating fee rate shall be 0.07 and shall remain in effect until the End Date. The Lessee shall calculate each annual operating fee subsequent to the initial operating fee payment using a capacity factor of 0.374 until the Lease Anniversary of the year in which the Lessor adjusts the capacity factor.

(3) **Final Operating Fee Payment.** The final operating fee payment is due on the Lease Anniversary prior to the End Date. The final operating fee payment covers the last year of Commercial Operations on the lease and shall be calculated in accordance with the formula in subsection (4) below.

(4) **The formula for calculating the operating fee in year  $t$ .**

$F_t$	=	$M_t$	*	$H$	*	$C_p$	*	$P_t$	*	$r_t$
(annual operating fee)		(nameplate capacity)		(hours per year)		(capacity factor)		(power price)		(operating fee rate)

Where:

$t$ =	the year of Commercial Operations on the lease starting from each Lease Anniversary, where $t$ equals 1 represents the year beginning on the Lease Anniversary prior to, or on, the COD.
$F_t$ =	the dollar amount of the annual operating fee in year $t$ .
$M_t$ =	the nameplate capacity expressed in megawatts (MW) rounded to the nearest second decimal place in year $t$ of Commercial Operations on the lease. Lessee project plans

indicate that the expected nameplate capacity of the project will be 468.00 MW when the project reaches its planned capacity based on 130 individual wind generation turbines rated at 3.60 MW each. As specified in the COP, the installation process may span several years at the outset of the project, and the final nameplate capacity after installation may differ from 468.00 MW. Also, the Lessee may decommission or repower individual wind turbines prior to the End Date.

The value of  $M_t$ , reflecting the availability of turbines, will be determined based on the COP. This value will be adjusted to reflect any modifications to the COP approved by BOEMRE as of the date each operating fee payment is due, in accordance with the calculation in Equation 1, for each year of Commercial Operations on the lease.

$$(1) M_t = \sum_{w=1}^{W_t} \left( N_w * \left[ \frac{\left( \sum_{d=1}^D E_{w,t,d} \right)}{D} \right] \right)$$

Where:

$W_t$  = Number of individual wind generation turbines,  $w$ , that will be available for Commercial Operations during any day of the year,  $t$ , per the COP.

$N_w$  = Nameplate capacity of individual wind generation turbine,  $w$ , per the COP expressed in megawatts (MW).

$E_{w,t,d}$  = Indicates whether individual wind generation turbine,  $w$ , will be available for Commercial Operations on day  $d$  of year  $t$ . The value is set to 1 for any day in year  $t$  for which the condition is true, i.e., the wind turbine will be available for Commercial Operations, and zero for any day in year  $t$  for which the condition is false, i.e., the wind turbine will not be available for Commercial Operations. The month of February is always assumed to have 28 days for purposes of this calculation, where March 1<sup>st</sup> will be counted as the first day of Commercial Operations if Commercial Operations commence on February 29<sup>th</sup> of a leap year.

$D$  = Days in the year set equal to 365 in all years for purposes of this calculation.

$M_t$  may be reduced only in the event that installed capacity is permanently decommissioned per the COP.  $M_t$  will not be changed in response to routine or unplanned maintenance of units, including the temporary removal of a nacelle for off-site repair or replacement with a similar unit.

EXAMPLE: Assume that the Lease Anniversary is January 1<sup>st</sup>, the COD Anniversary is July 1<sup>st</sup> commencing in the year 2014, that the facility will ultimately have 130 individual wind generation turbines with a nameplate capacity of 3.6 MW each, and that the COP specifies the following, cumulative installation schedule for wind

turbines to become available for Commercial Operations:

- July 1, 2014 (COD): 10 turbines (10 new units);
- October 1, 2014: 30 turbines (20 new units);
- January 1, 2015: 35 turbines (5 new units);
- July 1, 2015: 70 turbines (35 new units);
- January 1, 2016: 105 turbines (35 new units);
- February 29, 2016: 130 turbines (25 new units).

Further assume that the COP calls for 65 of the turbines to be decommissioned after September 30, 2038 ( $t = 25$ ), and that the remaining turbines are decommissioned at the End Date of March 15, 2039 ( $t = 26$ ).

The value of  $M_t$  would be estimated as demonstrated in Table 1a for each year of Commercial Operations on the lease in this example.

Table 1a: Example of  $M_t$  Calculations for Installation and Decommissioning

$t$	Turbines	MW	Commercial Operations Period	Comm. Ops. Days	Days in Year	Share of Days	MW	$M_t$	
1	10	36	Jul. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	184	365	50.41%	18.15	36.30	
	20	72	Oct. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	92		25.21%	18.15		
2	35	126	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365		100.00%	126.00	189.52	
	35	126	Jul. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	184		50.41%	63.52		
3	105	378	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365		100.00%	378.00	453.45	
	25	90	Mar. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	306		83.84%	75.45		
4	130	468	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365		100.00%	468.00	468.00	
...	...	...	...	...		...	...	...	...
24	130	468	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365		100.00%	468.00	468.00	
25	65	234	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365		100.00%	234.00	409.02	
	65	234	Jan. 1 <sup>st</sup> to Sep. 30 <sup>th</sup>	273	74.79%	175.02			
26	65	234	Jan. 1 <sup>st</sup> to Mar. 15 <sup>th</sup>	74	20.27%	47.44	47.44		

To illustrate the impact of decommissioning a portion of the individual wind generation turbines and replacing them with units of greater capacity on the calculation of  $M_t$ , assume that at the end of March 31, 2018, ten units are to be made unavailable due to decommissioning, and that the incremental units have a capacity of 5.0 MW and are expected to be made available for Commercial Operations on September 15, 2018. The impact on  $M_t$  in 2018 and in subsequent years prior to decommissioning starting in 2019 is illustrated in Table 1b.

Table 1b: Example of  $M_t$  Calculations for Repowering

$t$	Turbines	MW	Commercial Operations Period	Comm. Ops. Days	Days in Year	Share of Days	MW	$M_t$
5	120 (3.6)	432	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365	365	100.00%	432.00	455.67
	10 (3.6)	36	Jan. 1 <sup>st</sup> to Mar. 31 <sup>st</sup>	90		24.66%	8.88	
	10 (5.0)	50	Sep. 15 <sup>th</sup> to Dec. 31 <sup>st</sup>	108		29.59%	14.79	

	6	120 (3.6)	432	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365		100.00%	432.00	482.00
		10 (5.0)	50	Jan. 1 <sup>st</sup> to Dec. 31 <sup>st</sup>	365		100.00%	50.00	

H = the number of hours in the year for billing purposes which is equal to 8,760 for all years of Commercial Operations on the lease.

$c_p$  = the "Capacity Factor" in Performance Period  $p$ , which represents the share of anticipated generation of the facility relative to its generation at continuous full power operation at the nameplate capacity, expressed as a decimal between zero and one.

The Capacity Factor shall initially be set to a value of 0.374 ( $c_0$ ). The Capacity Factor shall be subject to adjustment at the end of each Performance Period. After the eighth year of Commercial Operations on the lease has concluded, the Lessee will utilize data gathered from years 4 through 8 of Commercial Operations on the lease and determine the Capacity Factor to be used to calculate subsequent annual payments, as provided for in Table 2 below. A similar process will be conducted at the conclusion of each five-year Performance Period, thereafter.

**Table 2: Definition of Performance Periods**

Performance Period ( $p$ )	Commercial Operation Years ( $t$ )	Payments Affected by Adjustment	Capacity Factor ( $c$ )	Data End Year ( $n$ )
0 (COD)	Not Applicable	Payments 1 to 9	$c_0 = 0.374$	--
1	$t = 4$ to 8	Payments 10 to 14	$c_1$	$n_1 = 8$
2	$t = 9$ to 13	Payments 15 to 19	$c_2$	$n_2 = 13$
3	$t = 14$ to 18	Payments 20 to 24	$c_3$	$n_3 = 18$
4	$t = 19$ to 23	Payments 25 to End Date	$c_4$	$n_4 = 23$

**Adjustments to the Capacity Factor**

The Actual 5-year Average Capacity Factor ( $X_p$ ) is calculated for each Performance Period after COD ( $p > 0$ ) per Equation 2 below.  $X_p$  represents the sum of actual, metered electricity generation in megawatt-hours (MWh) at the Delivery Point to the electric grid ( $A_t$ ) divided by the amount of electricity generation in MWh that would have been produced if the facility operated continuously at its full, stated capacity ( $M_t$ ) in all of the hours ( $h_t$ ) in each year,  $t$ , of the corresponding five-year period.

$$(2) X_p = \frac{\sum_{t=n-4}^n A_t}{\left( \sum_{t=n-4}^n M_t * h_t \right)}$$

Where:

$M_t$  = Nameplate Capacity as defined above.

$n$  = "Date End Year" value for the Performance Period,  $p$ , as defined in Table 2.

$p$  = Performance Period as defined in Table 2.

$A_t$  = Actual generation in megawatt-hours (MWh) associated with each year of Commercial Operations,  $t$ , on the lease; delivery point meter data supporting the values submitted for annual actual generation may be requested by BOEMRE in evaluating changes to the capacity factor.

$h_t$  = Hours in the year on which the Actual Generation associated with each year of Commercial Operations,  $t$ , on the lease is based; this definition of "hours in the year" differs from the definition of  $H$  in the operating fee equation above. The hours in the year for purposes of calculating the capacity factor must take into account the actual number of hours including leap years.

The value of the Capacity Factor at the outset of Commercial Operations is set equal to 0.374 ( $p = 0$ ) as stated in equation 3:

$$(3) c_0 = 0.374$$

The value of the Capacity Factor corresponding to each Performance Period ( $c_p$ ) is set according to equations 4A, 4B, and 4C as follows for each value of  $p$  greater than zero. The Capacity Factor is set equal to the Actual 5-Year Average Capacity Factor provided that the value falls within a range of plus or minus ten percent of the previous Performance Period's capacity factor.

$$(4A) c_p = X_p \text{ for } c_{p-1} * 0.90 \leq X_p \leq c_{p-1} * 1.10$$

$$(4B) c_p = c_{p-1} * 0.90 \text{ for } X_p < c_{p-1} * 0.90$$

$$(4C) c_p = c_{p-1} * 1.10 \text{ for } X_p > c_{p-1} * 1.10$$

All values for  $c_p$  shall be rounded to the nearest third decimal place.

$P_t$  = a measure of the annual average wholesale electric power price expressed in dollars per megawatt hour.

The Lessee shall calculate  $P_t$  at the time each operating fee payment is due, subject to approval by the Lessor. The Base Price ( $P_b$ ) shall equal the weighted average of the peak and off-peak spot price indices for the Northeast - Massachusetts Hub power market for the most recent year of data available as reported by the Federal Energy Regulatory Commission (FERC) as part of its annual State of the Markets Report with specific reference to the summary entitled "Electric Market Overview: Regional Spot Prices." The latest version of this report is available at <http://www.ferc.gov/market-oversight/mkt-electric/overview/elec-ovr-3yr-regional-elec-pr.pdf>. If FERC stops publishing its annual State of the Markets Report required for this calculation or the specified location of the data changes over time, the Lessor shall specify an alternate source of data and methodology that is approximately equivalent.

The peak and off-peak price indices shall be weighted 52.4% and 47.6%, respectively,

for purposes of estimating the weighted index value for the Base Price. For example, in the March 5, 2010 State of the Markets Report the peak price index for 2009 was \$46.24/MWh and the corresponding off-peak price index for 2009 was \$34.57/MWh, resulting in a weighted index value for the Base Price for 2009 ( $P_{2009}$ ) of \$40.69/MWh ( $=52.4\% * \$46.24 / \text{MWh} + 47.6\% * \$34.57 / \text{MWh}$ ). The calculation of  $P_b$  shall be rounded up to the nearest, second decimal place.

The Base Price shall be adjusted for inflation from the year associated with the published spot prices to the year in which the operating fee is to be paid as shown in equations (5A) and (5B):

$$(5A) P_t = P_b * \left( \frac{GDP_g}{GDP_{g-1}} \right)^{y-g} * \left( \frac{GDP_g}{GDP_b} \right) \text{ for } g \geq b$$

$$(5B) P_t = P_b * \left( \frac{GDP_g}{GDP_{g-1}} \right)^{y-b} \text{ for } g < b$$

Where:

$GDP$  = Annual Implicit Price Deflators for Gross Domestic Product (GDP deflator index) from Table 1.1.9, line 1, in the Survey of Current Business published by the U.S. Bureau of Economic Analysis (BEA) in the specified period; the latest version of this data is currently available at <http://bea.gov/national/nipaweb/TableView.asp?SelectedTable=13&ViewSeries=NO&Java=no&Request3Place=N&3Place=N&FromView=YES&Freq=Year&FirstYear=2007&LastYear=2009&3Place=N&Update=Update&JavaBox=no>

If BEA stops publishing the data required for this calculation, or the specified location of the data changes over time, the Lessor shall specify an alternative source of data and methodology that it considers approximately equivalent.

$b$  = The most recent year for which FERC reports the appropriate electricity spot price data expressed as the year, e.g., 2007 as in the illustrative example below.

$g$  = The most recent year for which GDP deflator indices are available from BEA expressed as the year, e.g., 2009 as in the illustrative example below.

$y$  = The year the annual payment is due expressed as the year, e.g., 2011 as in the illustrative example below.

The second term on the right-hand side of equation (5A) represents a projected annual change in the index of inflation employing the last year of data available from BEA, while the third term represents the cumulative change in the index of inflation up to the previous year.

	<p><b>Example:</b> The following hypothetical example is provided to illustrate the methodology using Equation (5A) and the illustrative values provided for <i>b</i>, <i>g</i>, and <i>y</i> above applied to historical GDP deflator data. If the actual FERC price indices are based on 2007 data and the GDP deflator indices are available for 2009, the inflation-adjusted price index value would be determined from equation (5A) as follows for a payment occurring in <i>t</i> = 2011:</p> $P_{2011} = P_{2007} * \left( \frac{GDP_{2009}}{GDP_{2008}} \right)^{2011-2009} * \left( \frac{GDP_{2009}}{GDP_{2007}} \right) = \frac{\$66.60}{\text{MWh}} * \left( \frac{109.770}{108.483} \right)^2 * \left( \frac{109.770}{106.214} \right) = \frac{\$70.47}{\text{MWh}}$ <p>Note: The current GDP deflator index is 109.770 for 2009, 108.483 for 2008, and 106.214 for 2007 (last revised by BEA on April 30, 2010); the FERC index price for the year 2007 is \$66.60/MWh (On-peak: \$77.39/MWh; Off-peak: \$54.73/MWh; last revised March 5, 2010).</p> <p>The Lessor and the Lessee shall use the latest FERC price indices and revised BEA GDP deflator index values at the time the pricing adjustments are made. The source of data used in the calculations shall be noted in the Lessee's documentation supporting their estimate of the value of <math>P_t</math> each year for review and approval by the Lessor.</p>
$r_t =$	<p>the operating fee rate.</p> <p>For the first 15 years of Commercial Operations on the lease (<math>t = 1</math> to 15) the operating fee rate shall be 0.02. Starting in the 16<sup>th</sup> year and continuing throughout the remaining years of the lease term (<math>t \geq 16</math>), the operating fee rate shall be 0.07.</p>

**(c) Reporting, Validation, Audits, and Late Payments.**

The Lessee must submit the values used in the operating fee formula to the Lessor at the time the annual payment based on these values is made. Submission of this and other reporting, validation, audit and late payment information as requested by BOEMRE shall be sent to Lessor using the contact information indicated in Addendum A, unless the Lessor directs otherwise. Failure to submit the estimated values and the associated documentation on time to Lessor may result in penalties as specified in applicable regulations.

Within 60 days of the submission by the Lessee of the annual payment, the Lessor will review the data submitted and validate that the operating fee formula was applied correctly. If the Lessor validation results in a different operating fee amount, the amount of the annual operating fee payment shall be revised.

The Lessor also reserves the right to audit the meter data upon which the Actual 5-year Average Capacity Factor is based. If, as a result of such audit, the Lessor determines that

any annual operating fee payment was calculated incorrectly, the Lessor shall have the right to correct any errors and collect the correct annual operating fee payment amount.

If the annual operating fee is revised downward as a result of Lessor's validation of Lessee's calculations or audit of meter data, the Lessee shall be refunded the difference between the amount of the payment received and the amount of the revised annual operating fee, without interest. Similarly, if the payment amount is revised upward, the Lessee shall be required to pay the difference between the amount of the payment received and the amount of the revised annual operating fee, plus interest on the balance in accordance with 30 CFR 218.54.

Late operating fee payments shall be charged interest in accordance with 30 CFR § 218.54.

### III. Financial Assurance

BOEMRE will base the determination for the amounts of all SAP, COP and decommissioning financial assurance requirements on estimates of the cost to meet all accrued lease obligations. BOEMRE determines the amount of supplemental and decommissioning financial assurance requirements on a case-by-case basis. The amount of the financial assurance must be no less than the amount required to meet all lease obligations, including:

- The projected amount of rent and other payments due the Government over the next 12 months;
- Any past due rent and other payments;
- Other monetary obligations; and
- The estimated cost of facility decommissioning.

(a) **Initial Financial Assurance Due Prior to Lease Issuance Date.** The Lessee must provide the required financial assurance as described below in a form acceptable to the Lessor prior to the Lease Issuance Date:

1. An initial lease-specific bond, or other approved means of meeting the Lessor's initial financial assurance requirements, in the amount of \$100,000, and
2. A supplemental bond, or other approved means of meeting the Lessor's supplemental financial assurance requirements, in the amount of \$388,278. This supplemental bond guarantees lease obligations including rental payments, project easement payments if applicable, and the estimated cost of decommissioning Lessee's meteorological facility. This amount was calculated as follows:
  - One year of rent payments due to the Government over the next 12 months: \$88,278.
  - Decommissioning estimate for the meteorological tower: \$300,000.

(b) **Additional Financial Assurance.** In addition to the initial lease-specific and supplemental financial assurance discussed above, the Lessee shall also be required to

provide an additional supplemental bond, or other form of financial assurance, and a decommissioning bond or other approved means of meeting the Lessee's decommissioning obligations.

- (1) Prior to the Lessor's approval of a COP, the Lessor will require an additional supplemental bond or other form of financial assurance in an amount determined by the Lessor based on the complexity, number, location of all facilities, activities and Commercial Operations planned in the COP, and estimates of the costs to meet all accrued obligations, in accordance with applicable BOEMRE regulations (30 CFR 285.515 through 285.537). The supplemental financial assurance requirement is in addition to the initial lease-specific financial assurance in the amount of \$100,000 and the initial supplemental financial assurance in the amount of \$388,278. The Lessee may meet these obligations by providing a new bond or other acceptable form of financial assurance, or increasing the amount of its existing bond other form of financial assurance.
- (2) The Lessor will determine the amount and the schedule for providing the decommissioning bond or other financial assurance based on the anticipated decommissioning costs in accordance with applicable BOEMRE regulations (30 CFR 285.515 through 285.537). The decommissioning obligation shall be guaranteed through an acceptable form of financial assurance and will be due according to the schedule beginning before commencement of the installation of commercial facilities on a date or dates to be determined by the Lessor.

**(C) Adjustments to Financial Assurance Amounts.** The Lessor reserves the right to adjust the amount of any financial assurance requirement (initial, supplemental or decommissioning) associated with this lease and/or reassess Lessee's cumulative lease obligations, including decommissioning obligations, at any time. Should the Lessee's cumulative lease obligations and/or liabilities increase or decrease, the Lessor shall notify Lessee of any adjustment to the financial assurance requirements and provide the Lessee an opportunity to comment in accordance with applicable BOEMRE regulations.

U.S. DEPARTMENT OF THE INTERIOR  
BUREAU OF OCEAN ENERGY MANAGEMENT, REGULATION AND ENFORCEMENT

**ADDENDUM "C"<sup>1</sup>**

LEASE-SPECIFIC TERMS, CONDITIONS, AND STIPULATIONS

Lease Number OCS-A 0478

The Lessee's rights to conduct activities on the lease area are subject to the following terms, conditions, and stipulations:

1	Cultural Resources	C-3
2	Geology	C-11
3	Air Quality	C-15
4	Water Quality	C-16
5	Electrical and Magnetic Fields	C-17
6	Coastal and Intertidal Vegetation	C-18
7	Subtidal Offshore Resources	C-19
8	Fisheries and Essential Fish Habitat	C-20
9	Marine Mammals and Sea Turtles	C-22
10	Avifauna and Terrestrial and Coastal Fauna	C-25
11	Visual Resources	C-27
12	Airport Facilities and Air Traffic	C-28
13	Marine Activities and Port Facilities	C-30
14	Communications	C-35

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<sup>1</sup> Note: Stipulations are developed on a case-by-case basis relating to location, technology utilized, and other relevant factors, including site-specific findings from project-specific environmental analyses.

## **ENVIRONMENTAL STIPULATIONS**

The mitigation, monitoring, and reporting requirements listed in this section are adopted as terms and conditions of the Cape Wind Lease. Monitoring results and required reports, shall be submitted to the Lessor as specified below:

**Bureau of Ocean Energy Management, Regulation and Enforcement**  
**Office of Offshore Alternative Energy Programs**  
**381 Elden Street, MS 4090**  
**Herndon, VA 20147**  
**Phone: 703-787-1300**  
**Fax: 703-787-1708**

To the maximum extent practicable, all activities undertaken pursuant to this lease must conform to the Best Management Practices identified in the BOEMRE's Record of Decision for the Cape Wind Energy Project, dated April 28, 2010.

Except where otherwise specified, all terms used herein shall have the meaning provided in the Cape Wind Energy Project Final Environmental Impact Statement (FEIS) (OCS Publication No. 2008-040) and the Cape Wind Record of Decision (75 FR 115).

## 1. REQUIRED MITIGATION AND MONITORING: CULTURAL RESOURCES

### I. Introduction

- a. Definition of "Cultural Resource": The term "cultural resource" shall have the same meaning as "archaeological resource" in BOEMRE regulations. The definition of archaeological resource provided in 30 CFR 285.112 is "any material remains of human life or activities that are at least 50 years of age and that are of archaeological interest (*i.e.*, which are capable of providing scientific or humanistic understanding of past human behavior, cultural adaptation, and related topics through the application of scientific or scholarly techniques, such as controlled observation, contextual measurement, controlled collection, analysis, interpretation, and explanation)."

### II. High Resolution Geophysical (HRG) Survey

Prior to the commencement of construction or any bottom-disturbing activities related to construction, the Lessee shall undertake a survey that meets the criteria of this section. This section may be modified if BOEMRE determines that the criteria are not technically feasible or necessary to implement at the project site.

- a. The Lessee shall conduct a grid-patterned survey of the offshore component of the Area of Potential Effect (APE), which includes the transmission line, and 1000 feet beyond as defined in Section 2.1 the *Bureau of Ocean Energy, Management, Regulation and Enforcement Documentation of Section 106 Finding of Adverse Effect*, available at [http://www.mms.gov/offshore/RenewableEnergy/PDFs/FAE\\_Final.pdf](http://www.mms.gov/offshore/RenewableEnergy/PDFs/FAE_Final.pdf). This area includes, but is not limited to, the area within which any bottom-disturbing activities related to construction may take place.
- b. Pre-Survey Meeting and Coordination
  - i. The Lessee shall coordinate survey activities with the Lessor. The Lessee shall meet with Lessor for a pre-survey planning meeting as early as possible to ensure that the surveys meet all of the Lessor's requirements.
  - ii. The Lessee shall be prepared to discuss the specifications of data acquisition systems, field technique, data to be acquired, processing and analysis to be performed, data and information to be submitted, and a navigation pre-plot (1: 12,000) at this meeting. In addition, the Lessee shall provide:
    1. Survey logistics (proposed survey area, dates, times, weather limitations, etc.);
    2. Vessel characteristics (size, equipment, etc.);

3. Sea floor characteristics expected based on available information (depth, slope, substrate, etc.);
4. A description of the sound source, including the produced sound frequency and intensity;
5. Sound propagation estimates acceptable to Lessor for determination of effects on protected species;
6. A description of ESA-listed species or ESA-designated critical habitat, marine mammals, fish and Essential Fish Habitat, and benthic resources that may be in the proposed survey area at the time of the proposed survey activities;
7. Proposed measures to avoid impacts to protected species and habitat, an effective monitoring approach to detect impacts, and potential adjustments to mitigation should adverse impacts occur.

**c. Line Spacing**

- i. The Lessee shall use line spacing, not to exceed 30 meters, for all geophysical data for cultural resources assessments.
- ii. The geophysical grid(s) for the project structures/devices and surrounding area for bathymetric charting, shallow hazards assessments, and archaeological resource assessments must be oriented in a manner that considers bathymetry, shallow geologic structure, and the renewable energy structure locations.
- iii. Lessee shall ensure that the line spacing for bathymetric charting using multi-beam technique and side scan sonar mosaic construction: (1) is suitable for the water depths encountered; and (2) provides suitable overlap and resolution of small discrete targets of 0.5m - 1.0m diameter.

**d. Notices**

- i. Before conducting offshore survey operations employing towed geophysical gear, the Lessee shall notify commercial fishers and other OCS users through a Notice to Mariners. The notice must be provided at least two weeks before the start of operations and approximately 72 hours prior to mobilization (30 CFR 285.606(3), 285.621(c), 285.641(c)).
  - ii. The Lessee shall provide Lessor with written notice at least two weeks before commencing survey activities. The Lessee must re-notify Lessor at least 72 hours before commencing survey activities.
- e. HRG survey data must provide information on subsurface hazards relevant to the project structures, construction activities, and operations.**

**f. Instrumentation & Navigation**

- i. The Lessee shall ensure that state-of-the-art geophysical instrumentation is used for shallow hazards assessments. The Lessee shall deploy such instrumentation in a manner that minimizes interference between the instrumentation systems, results in the least environmental impact practicable, and that records all data at the optimum sampling rate of the equipment for the depth/sweep rate used.
- ii. The Lessee shall use a state-of-the-art navigation system that can continuously determine the surface position of the survey vessel. The Lessee shall ensure that the precision of the navigation system is  $\pm 1$  meter. The Lessee shall continuously log position fixes digitally along the vessel track and annotate them on all records at intervals no greater than 100 meters.
- iii. The Lessee shall connect all data recorders to the navigation system to ensure proper integration of information, and shall ensure that all instruments are adequately calibrated and that all recorded data are readable, accurate, and annotated.

**g. Magnetometer**

- i. The Lessee shall acquire magnetometer data. The Lessee shall ensure that magnetometer survey techniques are capable of detecting and aiding the identification of ferrous, ferric, or other objects having a distinct magnetic signature.
- ii. The Lessee shall tow the magnetometer sensor no more than 6 meters above the seafloor, where bathymetry allows, and minimize interference from the vessel hull and the other survey instruments.
- iii. The Lessee shall ensure that the magnetometer sensitivity is 1 gamma or less and ensure that the background noise level does not exceed a total of 3 gammas peak to peak.
- iv. The Lessee shall ensure that all magnetometer data is contoured for the entire survey area.

**h. Seafloor Imagery/Side Scan Sonar**

- i. The Lessee shall conduct a side scan sonar survey to identify potential cultural resources that resources lying on or embedded in the seafloor.
- ii. The Lessee shall ensure that side scan sonar recordings are of optimal quality (in terms of resolution, minimal distortion). The Lessee shall correct for slant range, lay back, and vessel speed to provide a true plan view, and operate the system in a manner that provides 100 percent coverage of the seafloor in the survey area.
- iii. The Lessee shall use a digital dual channel side-scan sonar system with preferred frequencies of 445 and 900 kHz, and no less than 300

and 500kHz dual frequencies, to record continuous planimetric images of the seafloor.

- iv. The Lessee shall provide a mosaic of the recorded side-scan sonar data.
  - v. The Lessee shall tow the side scan sonar sensor above the seafloor at an altitude that is 10 to 20 percent of the range of the instrument.
  - vi. The Lessee shall ensure that the line spacing and display range for side scan sonar are appropriate for the water depth. In addition, the Lessee shall ensure that the data are of such quality as to permit detection and evaluation of seafloor objects and features of at least one meter in diameter within the survey area.
  - vii. The Lessee shall make sure that the vertical sound beam for side scan sonar width is appropriate to the water depth, and the horizontal sound beam width provides optimum resolution.
  - viii. The Lessee shall calibrate the side scan sonar to enhance echo returns from small nearby objects and features without sacrificing the quality of echo returns from more distant objects and features.
- i. **CHIRP Shallow (Seismic) Penetration Sub-bottom Profiler**
- i. The Lessee shall use a CHIRP sub-bottom acoustic profiler system to determine the character of near-surface geologic features over the survey area.
  - ii. The Lessee shall make sure that the CHIRP sub-bottom acoustic profiler system is capable of achieving a resolution of vertical bed separation of at least 0.3 meters in the uppermost 15 meters below the mud-line.
- j. **Survey Report Requirements:** Lessee shall submit a report detailing its survey results in accordance with guidance provided by Lessor at a later time.

### **III. Geological and Geotechnical (G&G) Survey**

- a. The Lessee must extract at least one vibracore from the planned location of each wind turbine generator (WTG).
- b. The Lessee shall examine vibracores and for those vibracores where there is visible evidence of paleosols, perform the following analyses:
  - i. Sediment grain size analyses, point count analysis, geochemical analysis, palynological analysis, and an examination for the presence/absence of preserved landscapes or paleosols.
  - ii. Radiometric dating (C14, Pb210, and possibly Cs137) of strata or the organic materials contained in them to get a more complete picture of the relative age of different layers in the wind turbine project area as

well as the depositional dynamics that might have bearing on the sub-surface cultural resources in the region.

- iii. Sediment shear strength to determine susceptibility to current scour for features that initially stand proud of the bottom. In cases where shear strength correlates well with sub-bottom profiler data, Lessee shall use shear strength to extrapolate directly observed stratigraphy from the vibracores to other areas of the turbine array only surveyed with the sub-bottom profiler.

#### **IV. Predictive Modeling of Cultural Resources Sites**

- a. The Lessee shall conduct spatial analyses and modeling, using cultural resources data from analogous areas on land, to produce models of paleo-site locations, activity areas, and areas likely to contain and preserve cultural resources in the offshore component of the APE.
- b. The Lessee shall use predictive models, refined with the addition of data as indicated above, to produce a scientifically defensible rationale for avoiding bottom disturbance where possible. In areas where bottom disturbance cannot be avoided, Lessee shall conduct additional cultural resources surveys to determine the presence or absence of cultural resources.

#### **V. Protection of Cultural Resources**

- a. If the results of any survey indicate the potential presence of cultural resources, Lessee shall:
  - i. Avoid the potential resource with a buffer distance determined by Lessor; or
  - ii. Study the potential resource with enough specificity to
    - 1. Determine that it is not an actual cultural resource, or
    - 2. Enable the Lessor to determine an appropriate buffer.
- b. The Lessee shall avoid all known shipwreck sites by a buffer distance determined by the Lessor.
- c. Lessee shall afford the Wampanoag Tribe of Gay Head/ Aquinnah and the Wampanoag Tribe of Mashpee (collectively, "the Tribes"), an opportunity to monitor all bottom disturbing activities in accordance with this section.
  - i. At least 30 days before bottom disturbing activities are to begin, Lessee shall send the Tribes a schedule of planned bottom disturbing activities, and invite each Tribe to send a Tribally-appointed monitor to participate on-ship as a monitor.
  - ii. Once Lessee has sent the schedule as required in subsection (i), above, Lessee is under no obligation to initiate another 30 day advance contact for any schedule changes or delays for activities already described in the schedule provided. However, Lessee shall in all instances keep the Tribes informed of bottom disturbing activity

schedule changes and delays in the same manner and to the same degree that the Lessee informs the Qualified Archaeologist (see section V.d., *infra.*) and other employees.

- iii. Lessee shall compensate monitors according to appropriate federal wage standards for their level of experience as cultural resources monitors.
- iv. If, 10 days prior to any scheduled departure, the Lessee has not received an affirmative response from both of the Tribes, that a tribal monitor will be available to participate, the Lessee shall notify Lessor, and Lessor may, at its discretion, authorize the Lessee to proceed without one or both of the Tribal monitors or order a rescheduling of the activity to accommodate the Tribal monitor(s).
- v. If the Lessee is scheduled to depart during working hours (9 am to 5 pm, Monday to Friday), and if the Lessee has received a response indicating that at least one Tribal monitor is available, but no Tribal monitor appears at the designated time and place, then Lessee must contact the BOEMRE at 703-787-1300 for instructions on how to proceed. Lessor may change this phone number or add additional phone numbers at its discretion.
- vi. If the Lessee is scheduled to depart outside of working hours, and if Lessee has received a response indicating that at least one Tribal monitor is available, but no monitor appears at the designated time and place, the Lessee may proceed without a Tribal monitor one hour after the designated time.
- vii. During periods when bottom disturbing activities are taking place, Lessee shall send monthly reports to Lessor regarding Tribal monitor participation.
- d. The Lessee shall ensure that all bottom disturbing work is monitored by a qualified archaeologist (QA) meeting the Secretary of the Interior's Professional Qualifications Standards for Archaeology (48 FR 44738, September 29, 1983).
- e. The Lessee shall ensure that all personnel have the credentials and experience sufficient to qualify them to perform the necessary work.
- f. In the event of an unanticipated discovery of cultural resources or indicators likely to suggest the possibility of cultural habitation, the Lessee shall follow the unanticipated discovery ("chance finds") of cultural resources and human remains procedures set forth below.

**VI. Procedures for the Unanticipated Discovery ("Chance Finds") of Cultural Resources And Human Remains**

- a. On-Site Responsibilities

- i. **STOP WORK.** If any employee, contractor, or subcontractor of Lessee believes that he or she has uncovered a cultural resource or human remains at any point in the project, Lessee shall immediately cease all bottom disturbing activities in the area of the discovery. The discovery location should be secured at all times. The Lessee shall report the discovery to Lessor within 72 hours of such discovery. Lessee shall keep the location of the discovery confidential and take no action that could adversely affect the discovery.
- ii. **DETERMINE COURSE OF ACTION.** The Lessee may choose to either
  1. Avoid the area of discovery including a buffer determined by the Lessor; or
  2. Study the potential resource with enough specificity to
    - a. Determine that it is not an actual cultural resource or human remains, or
    - b. Enable the Lessor to determine the size of the buffer necessary to avoid impacts to the discovery.
- iii. **REPORT TO LESSOR.**
  1. If Lessee chooses to study the potential resource, Lessee shall submit to Lessor a report fully detailing the Lessee's rationale supporting its determination whether or not the discovery is a cultural resource. Lessor may require Lessee to conduct additional investigations to determine whether the discovery represents a cultural resource, whether the resource is eligible for listing on the National Register of Historic Places (NRHP), and whether the resource has been impacted by project activities. If Lessor determines that the discovery is eligible for the NRHP, Lessee shall follow Lessor's instructions related to the protection of the cultural resource and/or how to mitigate adverse effects to the site.
  2. If Lessee chooses to study the potential resource, the Lessee shall ensure that a QA examines the discovery of potential cultural resources or human remains. Lessee shall ensure, if the QA determines that the discovery may contain human remains, that a physical anthropologist or person with similar expertise examines the find. If it is determined to be human remains, the Lessee shall strictly comply with the provisions of the Native American Graves Protection and Repatriation Act (NAGPRA), 25 U.S.C. 3001 *et seq.*, and the Archaeological Resources Protection Act (ARPA), 16 U.S.C. 470aa *et seq.* In addition, the Lessee shall follow the procedures described below.

- iv. NOTIFY TRIBAL REPRESENTATIVE. In the event that the QA believes that the discovery relates to Tribal interests, the Lessee shall immediately notify the Tribal Historic Preservation Officers of the Tribes.
- v. TREATMENT OF HUMAN REMAINS. The Lessee shall at all times treat any human skeletal remains, regardless of antiquity or ethnic origin, with dignity and respect. The Lessee shall ensure that the remains are covered in place with a geotextile or other materials (other than soil or rocks) for temporary protection and to shield the remains from being photographed. The Lessee shall not call 911 (unless the remains are obviously recent) or speak with any representative of the media about the discovery of human remains. The Lessee shall not, under any circumstance, photograph the remains.

*Cross-reference: Geology (Section 2), Subtidal Offshore Resources (Section 7), Fisheries and Essential Fish Habitat (Section 8), Marine Mammals and Sea Turtles (Section 9) and Marine Activities and Port Facilities (Section 13).*

## 2. REQUIRED MITIGATION AND MONITORING: GEOLOGY

### I. Introduction

- a. Section 1, REQUIRED MITIGATION AND MONITORING: CULTURAL RESOURCES, above, includes numerous requirements related to the High Resolution Geophysical (HRG) survey. This section describes further technical requirements and methodology by which Lessee is to undertake HRG survey and reporting activities, and is not intended to contradict or abrogate any of Lessee's responsibilities identified in Section 1.
- b. The Lessee shall use line spacing, not to exceed 150 meters, for the HRG Survey requirements for this section.
- c. Prior to commencement of construction or any bottom-disturbing activities related to construction, the Lessee shall conduct an HRG survey and a G&G survey.
- d. Lessee shall conduct the G&G survey and subsequent analysis in accordance with this section and Section 1, above.
- e. Lessor may require that a certified verification agent (CVA) nominated by Lessee and approved by Lessor in accordance with 30 C.F.R. § 285.706, review and certify all or part of the survey data and reports.

### II. High-Resolution Geophysical (HRG) Survey Requirements

#### a. General

- i. The HRG survey must identify and delineate fragile habitats within the footprint of all bottom-disturbing activities.
- ii. The HRG and G&G surveys must address foundation conditions, the foundation zone of each bottom-founded structure, and conditions along the proposed power cable routes internal and external to the leased area.
- iii. The Lessee shall conduct all survey activities utilizing the best available survey technology and consistent with the objectives of reliable detection and accurate evaluation of site conditions.

#### b. Seafloor Imagery/Side Scan Sonar (SSS)

- i. At a minimum, the recorded data must be mosaiced in areas of complex seafloor topography, fragile habitats, and man-made debris.
- ii. The instrument must be calibrated to enhance backscatter intensity from small targets nearby without sacrificing the detection and resolution of more distant targets.

#### c. CHIRP Shallow (Seismic) Penetration Sub-bottom Profiler

- i. Lessee shall use a high-resolution CHIRP sub-bottom profiler to delineate near-surface geologic strata and features throughout the

survey area. The profiler must be capable of resolving thin beds of at least 0.3 meters in the uppermost 15 meters below the seabed.

**d. Medium Penetration Seismic Profiler**

- i. Lessee shall use a medium penetration seismic profiler to conduct acoustic reflection profiling. The acoustic reflection profiling must continuously resolve deeper geological features over the survey area from the seafloor surface to a minimum depth of 0.2 to 0.3 seconds two-way travel time depending on the specific geologic conditions anticipated.
- ii. The Lessee shall ensure that the medium penetration seismic profiler is capable of penetrating at least 15 meters below the potential depth of foundation piles, and imaging both the thick section of unconsolidated glacial sediments and the immediately underlying consolidated section, or 61 meters below mud line (BML), whichever is greater. Vertical resolution shall not exceed 6 meters at maximum depth.
- iii. Lessee shall ensure that data is recorded and sampled at an interval of one millisecond or less.
- iv. Lessee shall ensure that the seismic source provides a simple, stable, and repeatable signature that is near to minimum phase output.
- v. Lessee shall ensure that the data is acquired digitally (minimum 24 channels), and processed (in Automatic Gain Control (AGC), True Amplitude, and Wave Equation Migration formats, as needed) to enhance the interpretation of shallow structures (e.g., faults) and gas.

**e. G&G Surveys**

- i. The geophysical shallow hazards assessment (based on the acquisition and analysis of HRG data) shall be designed and executed to provide information on seafloor and subsurface conditions that may be hazardous to the construction, operation and installation of renewable energy structures and devices. The data shall also provide information on site conditions useful for the design of structures and foundations as well as for construction, installation, and removal activities.
- ii. The Lessee shall analyze sediments and physical conditions within the Area of Potential Physical Effects (APPE) for use in final foundation design and to develop site-specific best management practices (BMPs).
- iii. The Lessee shall conduct sufficient G&G sampling and testing to adequately evaluate the vertical and lateral variation in seabed conditions within the survey area and evaluate foundation conditions

at the location of each proposed structure based on analysis of one or more soil borings.

- iv. The Lessee shall also perform sufficient geological/geotechnical sampling and testing of foundation soils to thoroughly categorize foundation engineering conditions within the proposed power cable corridor to shore.
- v. The Lessee shall utilize the results of the shallow hazards assessment in planning its geotechnical site survey and in selecting locations/depths of soil samples and in-situ tests.
- vi. The Lessee shall analyze in-situ and laboratory soil test data to estimate foundation soil response to maximum anticipated static and dynamic loads.
- vii. The Lessee shall determine embedment depth and predict susceptibility of the foundation to liquefaction and scour phenomena.
- viii. The Lessee shall characterize liquefaction potential, specifically in the context of regional seismicity.
- ix. The Lessee shall evaluate the potential for seafloor erosion and scour in the context of empirically derived current velocity data for the project area.
- x. The Lessee shall integrate the results of the geotechnical and shallow hazards assessments to provide a comprehensive analysis of foundation stability for each structure.
- xi. The Lessee shall follow the geotechnical sampling/testing protocols as follows: In situ cone penetrometer tests (CPTs) and soil borings must be taken at all platform and turbine locations except as provided below. In some cases, CPT data may substitute for soil borings, provided that the Lessor, and the Lessee's CVA if available, determine that there is adequate continuity of soil and rock strata, evidenced by soil properties and engineering performance parameters. All CPTs and soil borings must extend at least 10m below the tip of the foundation location. If soil conditions do not allow CPTs to be pushed using a seabed frame to routinely penetrate to the prescribed total depth, the Lessor shall, in consultation with Lessee's CVA, if available, determine whether borings are needed below the refusal depth at specific locations to support the engineering design of the project. Where full depth CPT data can be obtained with a seabed CPT frame at all structures, soil borings can be limited to (1) a portion of the structure locations depending on subsurface complexity (based on the results of the geophysical survey), and (2) the electrical service platform (ESP) site. The Lessor, in consultation with the CVA, if available, may approve departures from the above requirements if it determines that doing so will not in any way jeopardize the

engineering integrity of the project, or pose a significant adverse risk to safety or environmental and cultural resources.

**III.** In the event a COP is approved, Lessee shall:

- a.** install scour protection mats and/or rock armor at the base of all installed monopoles and the electrical service platform (ESP) and monitor sediment scour with biennial visual inspections (aided or unaided by optical devices);
- b.** ensure that cables are initially buried as provided in an approved COP;
- c.** conduct biennial visual inspections (aided or unaided by optical devices) of inner array cable routes in areas of migrating sand waves; and
- d.** ensure that cables remain buried per the specifications in an approved COP, if visual inspections indicate that cables are not buried as provided in an approved COP.

*Cross-reference: Cultural Resources (Section 1), Subtidal Offshore Resources (Section 7), Fisheries and Essential Fish Habitat (Section 8), and Marine Activities and Port Facilities (Section 13).*

### **3. REQUIRED MITIGATION AND MONITORING: AIR QUALITY**

Lessee shall meet the requirements listed in the general conformity determination document issued by Lessor on January 3, 2010:

- I. Prior to initiating any construction activities, the Lessee shall purchase Emission Reduction Credits (ERCs) for any year in which projected NO<sub>x</sub> emissions within Rhode Island exceed 100 tons per year. The Lessee may choose to meet offset requirements through a combination of ERC purchases and emissions control reduction measures. The Lessee shall provide BOEMRE with documentation of the purchase of ERCs.
- II. The Lessee shall provide Lessor with descriptions of any emission control technologies, quantification of the emission reductions that would be achieved, and documentation demonstrating emissions reductions, for any emission reduction measures employed in lieu of ERCs. Lessee shall include documentation of source testing for all engines equipped with controls, and provide data from source tests performed on similar engines with identical control technologies.
- III. The Lessee shall provide Lessor with data on horsepower rating of all propulsion and auxiliary engines, duration of time operating in State waters, load factor, and fuel consumption, for each vessel, including vessels delivering materials and supplies to the staging site, going to and from Quonset Point.
- IV. The Lessee shall comply with any requirements specified by Lessor in order to meet the general conformity requirements applicable at the time of decommissioning of any facility or structure.
- V. The Lessee shall ensure that contractors operating diesel-powered equipment at the Quonset Point staging site use ultra low sulfur diesel fuel, if requested to do so by the Rhode Island Department of Environmental Management (RIDEM).
- VI. Lessee shall ensure that all contractors operating vehicles, diesel engines, or non-road diesel engines at the Quonset Point staging site limit unnecessary idling pursuant to the RIDEM Office of Air Resources' Air Pollution Control Regulation No. 45.

**4. REQUIRED MITIGATION AND MONITORING: WATER QUALITY**

- I. Prior to approval of a COP, Lessee shall finalize and implement the Operation & Maintenance (O&M) Plan detailing standard operating and maintenance protocols to ensure proper operation of offshore facilities. The O&M Plan shall specify operating guidelines, maintenance schedules, and materials approved for maintenance activities. The O&M Plan shall also include a maintenance program that details preventive and emergency maintenance functions as well as projections of unplanned and emergency WTG and ESP maintenance requirements.
- II. Prior to the approval of a COP, Lessee shall submit and implement an Oil Spill Response Plan (OSRP) and a Stormwater Pollution Prevention Plan (SWPPP) that must cover all phases of the project.
- III. In the event of a release of oil into the ocean, the Lessee must ensure that its employees, contractors, and responders follow the OSRP and comply with all applicable regulations and laws.

*Cross-reference: Mitigation related to oil spill response and stormwater pollution prevention in Avifauna and Terrestrial and Coastal Fauna (Section 10).*

**5. REQUIRED MITIGATION AND MONITORING: ELECTRICAL AND MAGNETIC FIELDS**

- I. The Lessee shall use three-conductor cables, and shall not use a flat arrangement of single conductor cables in separate trenches.
- II. The Lessee shall enclose all inter-array and offshore transmission high-voltage conductors in a shielded cable. The Lessee shall ensure that the cable is buried at a depth of at least 1.8 meters.

*Cross-reference: Mitigation related to cable burial depth in Fisheries and Essential Fish Habitat (Section 8).*

**6. REQUIRED MITIGATION AND MONITORING: COASTAL AND INTERTIDAL VEGETATION**

- I. Lessee shall survey eelgrass beds pursuant to the Massachusetts Energy Facilities Siting Board's (MEFSB) final decision for the Cape Wind Project (EFSB 07-8).
- II. Lessee shall conduct eelgrass surveys prior to construction until two years following the commencement of commercial operations. Lessee shall replant eelgrass if the results of surveying indicate that eelgrass was lost as a result of project activities.
- III. Lessee shall comply with the Massachusetts Environmental Policy Act (MEPA) Final Environmental Impact Review (FEIR) Certificate and MEFSB decision, which prohibits Lessee from anchoring vessels or performing cable installation work in the area near Egg Island where eelgrass beds are located. The Lessee shall use divers to confirm correct placement of work vessel anchors.
- IV. Pursuant to the MEFSB decision, Lessee shall conduct a dive survey to confirm the limits of the eelgrass bed near Egg Island no earlier than one year prior to the commencement of cable installation.
- V. Pursuant to with the MEFSB decision, Lessee shall aerially photograph the entrance to Lewis Bay.

*Cross-reference: Subtidal Offshore Resources (Section 7), Fisheries and Essential Fish Habitat (Section 8).*

## 7. REQUIRED MITIGATION AND MONITORING: SUBTIDAL OFFSHORE RESOURCES

- I. The Lessee shall monitor benthic community recovery in state waters pursuant to the Seafloor Habitat/Benthic Community Monitoring Plan contained in the MEPA FEIR and cited in the MEPA FEIR Certificate.
- II. Lessee shall implement the Seafloor Habitat/Benthic Community Monitoring Plan for monitoring the habitat and benthic community recovery on the OCS.
- III. The Lessee shall include three additional paired monitoring sites (control and impacted) to those outlined in the Seafloor Benthic Community Monitoring Plan to monitor the OCS portion of the transmission line route.
- IV. Annually, the Lessee shall provide to the Lessor summaries of the monitoring results and recommendations for future monitoring. Lessor may, at its discretion, modify Lessee's monitoring obligations based on the results of monitoring and Lessee's recommendations.
- V. The Lessee shall use scour mats unless Lessor makes a determination that scour mats will not work at a specific wind turbine location. The Lessee may submit a written request and justification to Lessor to use rock armor.

*Cross-reference: Related mitigation in Geology (Section 2), Fisheries and Essential Fish Habitat (Section 8).*

**8. REQUIRED MITIGATION AND MONITORING: FISHERIES AND ESSENTIAL FISH HABITAT**

- I. The Lessee shall not conduct in-water construction in Lewis Bay during the winter flounder spawning period (from January 1<sup>st</sup> to May 31<sup>st</sup>), except for the installation of the cofferdam for horizontal directional drilling (HDD).
- II. The Lessee shall follow soft-start procedures for monopile installation, to encourage juvenile and adult fish to vacate the area.
- III. On an annual basis, the Lessee shall visually inspect the seabed footing of each structure and any buried cables after the first year of being installed. If no initial deterioration is observed following the first year inspection, the Lessee shall visually inspect the seabed footing of each structure and any buried cables on a biennial basis. The inspection shall include the monitoring of scour mats. The Lessee shall inform the Lessor immediately if scour mats become dislodged and significant scouring is occurring.
- IV. The Lessee shall use scour mats unless Lessor makes a determination that scour mats will not work at a specific wind turbine location. The Lessee may submit a written request and justification to Lessor to use rock armor.
- V. The Lessee shall ensure that the cables are adequately buried so as not to interfere with fishing gear/activity or with the safe operation of the cables. The Lessee shall also conduct sample surveys of cables after any significant storm activity.
- VI. When conducting offshore survey operations employing towed geophysical gear, the Lessee shall notify commercial fishers and other OCS users through a Local Notice to Mariners. The notice must be provided at least two weeks before the start of operations and again at least 72 hours prior to mobilization.
- VII. The Lessee shall put a notice regarding the timeframe and location of construction and decommissioning activities two weeks before the start of operations and again at least 72 hours in advance of mobilization in the Local Notice to Mariners and send daily broadcasts on the appropriate marine channel as to construction and decommissioning activities for the upcoming day.
- VIII. The Lessee shall monitor benthic community recovery in state waters pursuant to the Seafloor Habitat/Benthic Community Monitoring Plan contained in the MEPA FEIR and cited in the MEPA FEIR Certificate.
- IX. Lessee shall implement the Seafloor Habitat/Benthic Community Monitoring Plan for monitoring the habitat and benthic community recovery on the OCS.
- X. The Lessee shall include three additional paired monitoring sites (control and impacted) to those outlined in the Seafloor Benthic Community Monitoring Plan to monitor the OCS portion of the transmission line route, approved by the BOEMRE.
- XI. Annually, the Lessee shall provide to the Lessor summaries of the monitoring results and recommendations for future monitoring. Lessor may, at its discretion,

modify Lessee's monitoring obligations based on the results of monitoring and Lessee's recommendations.

*Cross-reference: Geology (Section 2), Water Quality (Section 4), Subtidal Offshore Resources (Section 7), and Marine Mammals and Sea Turtles (Section 9), Marine Activities and Port Facilities (Section 13).*

**9. REQUIRED MITIGATION AND MONITORING: MARINE MAMMALS AND SEA TURTLES**

**I. ESA-Listed Marine Mammals and Sea Turtles**

- a. Appendix G of the FEIS contains the mitigation measures related to marine mammals and sea turtles developed by the Lessor and the National Marine Fisheries Service (NMFS) as a part of the Endangered Species Act (ESA) section 7 consultation process. Appendix J of the FEIS includes the Biological Opinion issued by NMFS. The mitigation, monitoring, and reporting stipulations identified below concerning threatened and endangered marine mammals and sea turtles under NMFS jurisdiction are mandatory requirements of the Lessor and NMFS and were identified as non-discretionary mitigation in the NMFS biological opinion and associated Incidental Take Statement, as well as the Biological Assessment prepared by Lessor.
- b. The Lessee shall abide by the following guidelines during all operations:
  - i. NMFS Northeast Regional Viewing Guidelines ([http://www.nmfs.noaa.gov/pr/pdfs/education/viewing\\_northeast.pdf](http://www.nmfs.noaa.gov/pr/pdfs/education/viewing_northeast.pdf))
  - ii. BOEMRE Gulf of Mexico Region's Notice to Lessee (NTL) No. 2007-G04 (<http://www.gomr.mms.gov/homepg/regulate/regs/ntls/2007NTLs/07-g04.pdf>)
  - iii. Marine Trash and Debris Awareness Elimination NTL No. 2007-G03 (<http://www.gomr.mms.gov/homepg/regulate/regs/ntls/2007NTLs/07-g03.pdf>).
- c. The Lessee shall ensure that all seismic surveying equipment complies with applicable equipment noise standards of the U.S Environmental Protection Agency (USEPA), and that all equipment shall have noise control devices no less effective than those provided on the original equipment.]
- d. The Lessee shall establish a 500 meter-radius exclusion zone around any seismic-survey source vessel and monitor the zone for marine mammals and sea turtles for 60 minutes prior to commencing or restarting surveys, during surveys, and for 60 minutes after surveys end. The exclusion zone shall be free of marine mammals or sea turtles for 60 minutes prior to commencing surveys and the seismic sound source shall be shut down immediately should a marine mammal or sea turtle enter the zone during surveying. During this time, the zone shall be monitored by a NMFS-approved observer(s) and the zone may not be obscured by fog or poor lighting conditions.
- e. The Lessee shall require a "ramp up" (depending on the technical limitations on the equipment used) at the beginning of each seismic survey in order to allow marine mammals and sea turtles to vacate the area prior to the

commencement of activities. Seismic surveys shall not commence at night time or when the exclusion zone cannot be effectively monitored.

- f. The Lessee shall provide a report to Lessor and NMFS within 90 days of completion of seismic survey activities that includes a summary of the seismic surveying and monitoring activities and an estimate of the number of marine mammals and sea turtles that may have been taken as a result of seismic survey activities. The Lessee shall also report to NMFS and Lessor, within 24 hours of observation, any observed injury or mortality to a marine mammal or sea turtle. The Lessee shall transmit to NMFS and Lessor, within 48 hours, any significant observations concerning impacts on marine mammals or sea turtles.
- g. The Lessee shall establish a preliminary 750 meter radius exclusion zone around any pile to be driven and monitor the zone for marine mammals and sea turtles for 60 minutes prior to commencing or restarting pile driving, during pile driving, and for 60 minutes after pile driving ends. The exclusion zone shall be free of marine mammals or sea turtles for 60 minutes prior to commencing pile driving. During this time, the zone shall be monitored by a NMFS-approved observer and the zone may not be obscured by fog or poor lighting conditions.
- h. The Lessee shall field measure the actual sound generated from pile driving, and based on these results, may either: (1) retain the original 750 meter zone or (2) request the approval of NMFS, and forward a copy of such request to Lessor, to establish a new zone based on field-verified measurements where underwater sound pressure levels (SPLs) are anticipated to equal or exceed the received the 180 dB re 1 microPa rms (impulse). Lessee must obtain written permission from NMFS, and forward a copy of such approval to Lessor, before implementing a new exclusion zone radius.
- i. The Lessee shall limit commencing pile driving to daylight hours, but may complete driving a specific pile if it is started during daylight hours.
- j. The Lessee shall ensure a "soft start" at the beginning of each pile installation in order to allow marine mammals and sea turtles to vacate the project area prior to the full commencement of pile driving activities.
- k. The Lessee shall provide the following reports to Lessor and NMFS during pile driving activities: (1) weekly status reports during pile driving activities, including a summary of the previous week's monitoring activities and an estimate of the number of marine mammals and sea turtles that may have been taken as a result of pile driving activities; (2) any observed injury or mortality to marine mammals or sea turtles from pile driving within 24 hours of such observation; (3) any observations concerning other impacts on marine mammals and sea turtles within 48 hours of such observation; and (4) a final report within 120 days after completion of the pile driving and construction activities, which summarizes monitoring activities, observed impacts to marine mammals and sea turtles, an assessment of the

effectiveness and feasibility of the mitigation measures employed, and any other information required by the Lessor.

- l. The Lessee shall notify NMFS and Lessor within 24 hours of the commencement of jet plowing activities, and again within 24 hours of the completion of the activity. All observations of marine mammals or sea turtles shall be reported to Lessors and NMFS within 24 hours, and a final report shall be provided to NMFS and the Lessor within 60 days of completing cable laying activities, which summarizes observed impacts to marine mammals and sea turtles, an assessment of the effectiveness and feasibility of the mitigation measures employed, and any other information required by the Lessor.
- m. The Lessee shall provide Lessor with a detailed decommissioning plan, prior to commencing decommissioning activities. The Lessor shall consult with NMFS and FWS regarding the contents of the plan, before authorizing commencement of decommissioning activities.

## II. Non-ESA Listed Marine Mammals

- a. The Lessee shall comply with the measures detailed above (e.g., establishment and monitoring of exclusion zones, ramp-up, and observers) with regard to all marine mammal species, including those not listed under the ESA. The Lessee shall obtain NMFS authorization from NMFS prior to commencing any activities under this lease which could result in the taking of marine mammals.

*Cross-reference: Fisheries and Essential Fish Habitat (Section 8) and pre-survey meeting and coordination requirements in Cultural Resources (Section 1).*

**10. REQUIRED MITIGATION AND MONITORING: AVIFAUNA AND TERRESTRIAL AND COASTAL FAUNA**

**I. Introduction**

- a. The mitigation, monitoring, and reporting stipulations identified in Section II, below concerning threatened and endangered avian species are mandatory requirements of the Lessor and FWS and were identified as non-discretionary mitigation in the FWS biological opinion and associated Incidental Take Statement, as well as the Biological Assessment prepared by Lessor. The requirements for ESA-listed avian species also protect non-ESA listed avian species.
- b. Appendix G of the FEIS contains the mitigation measures proposed in the Biological Assessment. Appendix J of the FEIS includes the Biological Opinion issued by FWS, including the full detail of mitigation required under the opinion.

**II. Stipulations**

- a. Within three months of lease issuance, the Lessee shall submit an Avian and Bat Monitoring Plan (ABMP) for approval by the Lessor and FWS. The plan must comply with the Avian and Bat *Framework* developed by Lessor, FWS, and the Lessee during the NEPA and ESA Section 7 consultation processes and the requirements under the FWS ESA Section 7 Incidental Take Statement (see Appendix G of the FEIS).
- b. The ABMP shall include an anti-perching plan for the installation, testing, and monitoring of an anti-perching mechanism that is consistent with the provisions of the FWS' Biological Opinion and in accordance with the procedures described in the Biological Assessment (Appendix G of the Cape Wind FEIS).
- c. The anti-perching plan shall provide for the post-construction monitoring of the effectiveness of the anti-perching mechanism twice a month during May, June, and July (highest tern abundance) for two years.
- d. In the event that a COP is approved, Lessee shall install a monitoring camera on the helipad on the ESP for remote viewing of the anti-perching device on a more frequent basis. The Lessee shall also provide Lessor with monthly reports on the results of the perching monitoring when listed avian species are potentially present in the leased area during the months of April through October of the project's first year of operation. The Lessor will determine the frequency of monitoring for subsequent years based on the monitoring results of the first year.
- e. Prior to the approval of a COP, Lessee shall submit and implement an Oil Spill Response Plan (OSRP) that must cover all phases of the project. The Lessee, in coordination with Lessor and FWS, shall develop a section within the OSRP that specifically addresses response activities that could occur in roseate tern and piping plover habitat (including breeding, foraging, and resting habitat),

and which includes measures to minimize damage to habitats during oil spill response activities.

- f. The Lessee shall report to the Lessor and FWS within 24 hours any roseate tern or piping plover mortality potentially attributable to the Cape Wind Project.
- g. The Lessee shall provide an annual summary report of ABMP monitoring efforts to Lessor and FWS and shall coordinate annually with Lessor and FWS to review the results of the monitoring efforts and the effectiveness of mitigation. Based on the results of these reviews, Lessor may authorize the discontinuation of, or adjustments to the monitoring protocols.
- h. The Lessee shall ensure that lighting on all structures complies with Federal Aviation Administration (FAA) requirements (see Airport Facilities and Air Traffic, Section 12) and U.S. Coast Guard (USCG) navigational safety lighting requirements (see Marine Activities and Port Facilities, Section 13) to minimize the potential for bird collisions.

*Cross-reference: Water Quality (Section 4), Airport Facilities and Air Traffic (Section 12), Marine Activities and Port Facilities (Section 13).*

**11. REQUIRED MITIGATION AND MONITORING: VISUAL RESOURCES**

I. In the event that a COP is approved:

- a. The Lessee shall ensure that the turbines are maintained an off-white (5 percent grey) tone.
- b. The Lessee shall ensure that no daytime white lighting is used.

*Cross-reference: lighting mitigation in Avifauna and Terrestrial and Coastal Fauna (Section 10) and Airport Facilities and Air Traffic (Section 12)*

## **12. REQUIRED MITIGATION AND MONITORING: AIRPORT FACILITIES AND AIR TRAFFIC**

The Lessee shall implement the provisions identified in the Federal Aviation Administration's May 7, 2010 Determination of No Hazard to Air Navigation, including the provisions below. In the event that, after the Lease Issuance Date of this lease, the Federal Aviation Administration (FAA) imposes requirements on the Lessee which supersede those in the FAA Determination above, the Lessee shall comply instead with such superseding post-lease requirements.

- I. The Lessee shall ensure that the 50 perimeter WTG nacelles and the 8 WTGs located adjacent to the ESP are lighted at night.
- II. The Lessee shall ensure that each perimeter WTG nacelle are lighted with one red flashing FAA light fixture equipped with automatic bulb changers.
- III. The Lessee shall ensure that every other perimeter WTG is lit by a single, medium-intensity red light at night, with each alternating perimeter WTG lit by a single, low-intensity red light.
- IV. The Lessee shall ensure that the red lights on the perimeter WTGs are synchronized to flash in unison. The red lighting shall flash on for one second, followed by no flashes for two seconds. The remainder of the 72 interior WTGs shall not be lit with red lighting at night.
- V. The Lessee shall ensure that medium intensity lanterns (FAA L-864) are used at corners/points of direction change with intervals of no more than 1.5 miles (2.4 km) between similar intensity fixtures.
- VI. The Lessee shall ensure that the balance of perimeter WTGs are marked with low intensity lanterns (similar in intensity to the FAA L-810 with visibility to approximately 1.15 miles). The eight turbines adjacent to the ESP shall each have one L-810 flashing red fixture. The balance of the interior turbines shall not have FAA lighting.
- VII. The Lessee shall ensure that all FAA lighting will be synchronized to flash as one at a rate of 20 flashes per minute (FPM).
- VIII. The Lessee shall ensure that helicopter navigational lights will be remotely activated on the helipad as needed.
- IX. Assuming that the Lessee obtains all other necessary approvals, the Lessee shall ensure that, during construction, construction structures and equipment are lit at night. At other times, the Lessee shall ensure that lights remain on when necessary and downshield when possible, including onshore security and equipment lighting and support vessel lighting.
- X. The Lessee shall ensure that the turbines are maintained an off-white (5 percent grey) tone.
- XI. The Lessee shall ensure that no daytime white lighting is used.

XII. The Lessee shall abide by the terms and conditions of the FAA's *Determination of No Hazard to Air Navigation*, issued on May 17, 2010, including:

- a. The Lessee shall pay for the TDX-2000 modification to the FMH ASR-8 radar at Falmouth.
- b. The Lessee shall provide financial assurance by escrow or other financial means in the amount of \$15,000,000 for a period of 24 months after 7460-2 forms are filed (based on substantiated, solid supporting evidence of an ASR-11 requirement) for the acquisition, siting, and installation of an ASR-11 system.
- c. In the event a COP is approved, the Lessee shall work directly with the FAA during the construction period to ensure that adequate temporary obstruction marking and lighting is in place to protect aviation until such time as all wind turbines are built and the final obstruction marking and lighting scheme is completed and operational.
- d. Lessee shall ensure that obstruction lighting systems on all wind turbines for which obstruction lighting is recommended by FAA is synchronized to flash at the same time.

*Cross-reference: lighting mitigation in Avifauna and Terrestrial and Coastal Fauna (Section 10), and Visual Resources (Section 11)*

**13. REQUIRED MITIGATION AND MONITORING: MARINE ACTIVITIES AND PORT FACILITIES**

- I. The Lessee shall implement all mitigation measures identified by the USCG in Appendix B of the FEIS (*Commandant (CG-ACO) letter of August 2, 2007, Cape Wind Navigation Terms and Conditions*), including the provisions below. In the event that, after the Lease Issuance Date of this lease, the US Coast Guard imposes requirements on the Lessee which supersede the terms in the letter cited above, the Lessee shall comply instead with such superseding post-lease requirements.
- II. Design Conditions:
  - a. Lessee shall ensure that the Cape Wind Energy Project (Project) is designed, positioned, arranged and operated in such a way as to maintain maritime navigation safety as determined by the USCG.
  - b. Lessee shall ensure that, during all phases of construction and operation, the Project, and each individual WTG, are marked with private aids to navigation in accordance with guidelines established by the International Association of Marine Aids to Navigation and Lighthouse Authorities (IALA), subject to the approval of the Commander, First Coast Guard District.
  - c. In the event that a COP is approved, Lessee shall mark each individual WTG with clearly visible, unique, alpha-numeric identification characters.
  - d. Prior to construction of any facility, the Lessee shall provide Lessor and the USCG with a proposed marking scheme and an evaluation of how the proposed private aids to navigation associated with the Project would impact the environment. The proposed marking scheme and evaluation must be approved in writing by Lessor after consultation with the USCG. Application shall be made to Commander (dpw-1), First Coast Guard District, to establish private aids to navigation for each WTG and the Project itself, and approval for all private aids to navigation shall be obtained before construction of the Project begins.
  - e. In the event a COP is approved, Lessee shall ensure that all WTG rotors (blade assemblies) are equipped with control mechanisms that can be operated from the control center of the Project.
    - i. Lessee shall ensure that the WTG control mechanisms enable control room operators to shut down (i.e. cease movement) any or all of the WTGs within two minutes of initiating shutdown procedures.
    - ii. When the USCG orders a shutdown, Lessee shall ensure that the Control Center operator immediately commences shutdown procedures.

- f. Lessee shall place safety lines, mooring attachments (for securing vessels), and access ladders for use in emergencies on each WTG. Plans for the design and placement of safety lines, mooring attachments and access ladders shall be submitted to Lessor and the USCG, and approved in writing by Lessor after consultation with the USCG.
- g. The Lessee shall obtain approval from the Lessor for any changes or design modifications that could affect navigation safety, including but not limited to, a change in number, size, or location of WTGs or a change in construction materials or construction method. Prior to obtaining such approval the Lessee shall submit to Lessor a notice addressing the following:
  - i. The need for the changes or modifications.
  - ii. An analysis of how the changes or modifications are expected to impact navigation safety.

### III. Operating Conditions:

- a. **Control Center:** Prior to construction of the Project, the Lessee shall submit a written plan for the control center to Lessor and the USCG. The Lessee shall not begin construction until the plan is approved in writing by Lessor. The plan shall include the information specified in paragraphs (i) through (iv) below.
  - i. **Standard Operating Procedures:** Method for establishing and testing WTG rotor shutdown; method(s) for notifying the USCG of mariners in distress or potential/actual search and rescue (SAR) incidents; method(s) for notifying the USCG of any events or incidents that may impact maritime safety or security.
  - ii. **Staffing:** The Control Center shall be staffed at all times. The number of personnel intended to staff the control center to ensure continuous monitoring of WTG operations, communications and surveillance systems; hours of operation; levels of supervision, job qualification requirements; initial, on-the-job, and refresher training requirements to ensure all watchstanders maintain satisfactory levels of proficiency at all times.
  - iii. **Communications:** Capabilities to be maintained by the control center to communicate with the USCG and mariners within and in the vicinity of the Project. Communications capability shall at a minimum include VHF marine radio and landline and wireless for voice and data and must include the ability to communicate with private vessels, USCG vessels and aircraft while underway, and Coast Guard Sector Southeastern New England.
  - iv. **Monitoring:** Capabilities to be maintained by the control center to monitor in real time marine traffic within and in the vicinity of

the Project and to monitor the status of all private aids to navigation established in accordance with paragraph 2.b above.

- b. **Icebreaking:** Prior to construction of the Project, the Lessee shall provide Lessor and the USCG with a written plan to break ice that may form within the area of the Project. The Lessee shall not begin construction until the plan is approved in writing by Lessor. At a minimum, this icebreaking plan shall include:
  - i. When icebreaking may be required.
  - ii. Provisions to ensure that ice freed from the Project will not impede navigation in surrounding channels.
  - iii. Identification of icebreaking services/resources (i.e., what company/companies will provide icebreaking services, and the capability of the company's icebreaking resources).
- c. **Worksite Construction:** Prior to commencing any surface or subsurface construction activity at the site, the Lessee shall submit to Lessor and the USCG, for Lessor's approval, a plan that describes the schedule and process for erecting each WTG, including all planned mitigations to be implemented to minimize any adverse impacts to navigation while construction is ongoing. Appropriate Notice to Mariners submissions must accompany the plan.

#### IV. Reporting Conditions:

- a. Upon commencing construction of the Project, and no later than the first calendar day of each succeeding month while construction is in progress, the Lessee shall provide a written status report to Lessor and the USCG which shall include:
  - i. The current construction status of the project.
  - ii. Changes to the construction schedule or process described in the plan required by paragraph 3.c above.
  - iii. A description of any complaints received (either written or oral) by boaters, fishers, commercial vessel operators, professional maritime associations or organizations or other mariners regarding impacts to navigation safety allegedly caused by construction boats, barges, or other equipment. Describe any remedial action taken or planned to be taken in response to complaints received.
  - iv. Copies of any correspondence received by the Lessee from other federal, state, or local agencies that mention or address navigation safety issues.
- b. For each existing WTG, and not later than 30 days prior to January 1, April 1, July 1, and October 1 each year, the Lessee shall provide Lessor

and the USCG with its planned WTG maintenance schedule for each respective quarter. Appropriate Notice to Mariners submissions will accompany each maintenance schedule.

V. Miscellaneous Conditions:

- a. To ensure sufficient opportunity for the public to receive information directly from the owners/operators of the Project, the Lessee shall attend quarterly meetings of the Southeastern Massachusetts Port Safety Forum and brief the forum on the status of construction and operations, and on any problems or issues encountered with respect to navigation safety.
- b. Lessee shall submit in writing to Lessor and the USCG, for approval by Lessor, any change to a plan or other submission required by Design Conditions and Operating Conditions (sections II. and III. above), whether prior to or during construction or operation of the Project.

VI. Caveats:

- a. Savings: Nothing in these Terms and Conditions exempts the Lessee from meeting any other terms, conditions, or obligations that may be imposed by Federal law or regulation, or other Federal agencies.
- b. The Project construction and operation, including the control center and its operators, and all plans and policies related thereto, shall be subject to regular review and examination by the USCG on at least an annual basis, or more frequently if circumstances dictate.

VII. In Addition:

- a. The Lessee shall incorporate all of the 13 specific mitigation measures identified in Section 7.0 of the *Cape Wind Revised Navigational Risk Assessment (16Nov06)*:
  - i. The Lessee shall not prohibit vessels from entering, operating, or anchoring in the Leased area or establish exclusionary zones in the Leased area.
  - ii. The Lessee shall implement procedures outlined by the USCG to deconflict the areas around ongoing construction activities.
  - iii. The Lessee shall design the WTG monopiles to withstand the forces of up to six (6) inch thick ice floes impacting the monopile.
  - iv. The Lessee shall initiate manual shutdown of WTG(s) experiencing icing conditions if conditions warrant such a shutdown.
  - v. The Lessee shall employ either seabed scour control mats or rock armor for scour protection to limit changes to bottom contours in the vicinity of the WTGs.
  - vi. The Lessee shall provide private aids to navigation (PATONs) (lights and sound signals) within the Leased area to assist

mariners when navigating in and around the Leased area. Other PATON measures may be required.

- vii. The Lessee shall mark each WTG with its alphanumeric designation to serve as a point of reference for mariners.
  - viii. The Lessee shall provide the USCG, other local, state, and federal agencies, and commercial salvors with a plan showing the designations of each WTG.
  - ix. The Lessee shall continue coordinating with the USCG and NOAA regarding the demarcation of the wind energy project on NOAA nautical charts covering the area.
  - x. The Lessee shall immediately shut down all or a portion of the WTGs upon notification from the USCG that search and rescue aircraft have been ordered to respond to an incident within or immediately adjacent to the Wind Park.
  - xi. The Lessee shall ensure that its work vessels that are working in the area assist vessels in distress within the Leased area upon receiving a request for assistance from the vessel or the USCG.
  - xii. The Lessee shall ensure that the helipad on the ESP can be used by USCG HH-60 Jayhawk and HH-65 Dolphin helicopters if requested to do so by the USCG.
  - xiii. The Lessee shall work with the USCG, NOAA, the Southeastern Massachusetts Port Safety and Security Forum, and other appropriate entities to educate mariners on navigation safety issues related to the wind farm.
- b. The Lessee shall comply fully with the International Regulations for Preventing Collisions at Sea (COLREGS) as the COLREGS are considered a valid and primary measure to mitigate potential radar impacts within and in the vicinity of the Leased area.

#### **14. REQUIRED MITIGATION AND MONITORING: COMMUNICATIONS**

- I. The Lessee shall avoid use of radio frequencies listed in Table 5.3.4-1 in the FEIS on VHF marine radios (two-way radios) used for construction. The Lessee shall ensure that VHF marine radios used for construction are tested for output to ensure that they are not inadvertently tuned to any of these frequencies, and to ensure that they have no spurious emission within +/-50 KHz. The use of VHF marine radios for legitimate ship-to-ship communications is permitted.
- II. The Lessee shall advise watercraft to respect a two wavelength distance from the construction cranes at the lowest frequency of interest, which would be approximately 1,219.5 meters on 500 KHz.

*Cross-reference: Marine Activities and Port Facilities (Section 13).*