

Supplemental Project Information and Conceptual Project Engineering Design Drawings

This appendix includes the following:

- Additional information regarding location of wind turbine generators (WTGs) and offshore substations (OSSs) within the Revolution Wind Farm (RWF);
- Responses to Attachment B of the Bureau of Ocean Energy Management's (BOEM's) Guidelines for Information Requirements for a Renewable Energy Construction and Operations Plan (COP);
- Plan and profile maps for the Revolution Wind Export Cable (RWECC); and
- Conceptual engineering design drawings for foundations and subsea cables.

This table provides surface locations and water depths for the WTGs and OSSs.

WTG/OSS Location ID No.	NAD83 (2011) UTM Zone 19N		WGS84		Water Depth (Meters) ¹
	Easting (meters)	Northing (meters)	Longitude (DD)	Latitude (DD)	
WTG_01	321578	4571668	-71.130383	41.276756	-37.86
WTG_02	321578	4569816	-71.129841	41.260085	-42.30
WTG_03	319726	4567964	-71.151387	41.243003	-44.37
WTG_04	321578	4567964	-71.1293	41.243414	-44.29
WTG_05	323430	4567964	-71.107212	41.24382	-42.45
WTG_06	325282	4567964	-71.085124	41.244223	-42.64
WTG_07	327134	4567964	-71.063036	41.244621	-42.74
WTG_08	317874	4566112	-71.172921	41.225918	-43.82
WTG_09	319726	4566112	-71.15084	41.226332	-41.33
WTG_10	321578	4566112	-71.128759	41.226743	-37.71
WTG_11	323430	4566112	-71.106677	41.227149	-41.71
WTG_12	325282	4566112	-71.084594	41.227551	-40.59
WTG_13	327134	4566112	-71.062512	41.227949	-36.66
WTG_14	316022	4564260	-71.194444	41.208828	-42.86
WTG_15	317874	4564260	-71.172369	41.209247	-41.67
WTG_16	319726	4564260	-71.150294	41.209661	-32.19
WTG_17	323430	4564260	-71.106142	41.210478	-40.78
WTG_18	325282	4564260	-71.084065	41.21088	-36.64
WTG_19	327134	4564260	-71.061988	41.211277	-34.08
WTG_20	314170	4562408	-71.215956	41.191735	-41.97
WTG_21	316022	4562408	-71.193887	41.192158	-40.53
WTG_22	317874	4562408	-71.171818	41.192576	-40.25
WTG_23	319726	4562408	-71.149748	41.19299	-36.78
WTG_24	321578	4562408	-71.127678	41.193401	-36.28
WTG_25	323430	4562408	-71.105607	41.193806	-38.68
WTG_26	314170	4560556	-71.215393	41.175065	-36.14
WTG_27	316022	4560556	-71.19333	41.175487	-41.27
WTG_28	317874	4560556	-71.171267	41.175906	-39.66
WTG_29	319726	4560556	-71.149202	41.17632	-38.27
WTG_30	321578	4560556	-71.127138	41.176729	-36.57
WTG_31	323430	4560556	-71.105073	41.177135	-36.36
WTG_32	310466	4558704	-71.258946	41.157537	-47.52
WTG_33	312318	4558704	-71.236889	41.157968	-40.98
WTG_34	314170	4558704	-71.214832	41.158395	-37.03
WTG_35	316022	4558704	-71.192774	41.158817	-39.22
WTG_36	317874	4558704	-71.170716	41.159235	-41.61
WTG_37	319726	4558704	-71.148657	41.159649	-35.00
WTG_38	321578	4558704	-71.126598	41.160058	-34.31
WTG_39	323430	4558704	-71.104539	41.160463	-35.52

WTG/OSS Location ID No.	NAD83 (2011) UTM Zone 19N		WGS84		Water Depth (Meters) ¹
	Easting (meters)	Northing (meters)	Longitude (DD)	Latitude (DD)	
WTG_40	325282	4558704	-71.082479	41.160865	-34.91
WTG_41	327134	4558704	-71.060419	41.161261	-33.70
WTG_42	328986	4558704	-71.038358	41.161654	-32.79
WTG_43	330838	4558704	-71.016297	41.162043	-33.83
WTG_44	332690	4558704	-70.994235	41.162427	-34.20
WTG_45	334542	4558704	-70.972173	41.162807	-31.35
WTG_46	336394	4558704	-70.95011	41.163183	-27.18
WTG_47	321578	4556852	-71.12606	41.143387	-36.16
WTG_48	323430	4556852	-71.104006	41.143792	-33.63
WTG_49	325282	4556852	-71.081951	41.144193	-32.84
WTG_50	327134	4556852	-71.059896	41.144589	-33.25
WTG_51	328986	4556852	-71.037841	41.144982	-33.34
WTG_52	330838	4556852	-71.015786	41.14537	-31.15
WTG_53	332690	4556852	-70.99373	41.145754	-32.29
WTG_54	334542	4556852	-70.971673	41.146134	-31.55
WTG_55	336394	4556852	-70.949616	41.146509	-29.61
WTG_56	321578	4555000	-71.125521	41.126715	-34.83
WTG_57	323430	4555000	-71.103473	41.12712	-31.98
WTG_58	325282	4555000	-71.081424	41.127521	-34.29
WTG_59	328986	4555000	-71.037325	41.12831	-33.57
WTG_60	330838	4555000	-71.015275	41.128698	-32.33
WTG_61	332690	4555000	-70.993225	41.129081	-32.72
WTG_62	334542	4555000	-70.971174	41.129461	-31.10
WTG_63	336394	4555000	-70.949122	41.129836	-32.05
WTG_64	338246	4555000	-70.92707	41.130207	-33.08
WTG_65	340098	4555000	-70.905018	41.130574	-33.93
WTG_66	341950	4555000	-70.882966	41.130937	-34.28
WTG_67	343802	4555000	-70.860913	41.131295	-31.38
WTG_68	345654	4555000	-70.838859	41.13165	-37.99
WTG_69	327134	4553148	-71.058853	41.111245	-34.72
WTG_70	328986	4553148	-71.036809	41.111637	-32.76
WTG_71	330838	4553148	-71.014765	41.112025	-35.64
WTG_72	332690	4553148	-70.99272	41.112409	-34.89
WTG_73	334542	4553148	-70.970675	41.112788	-35.20
WTG_74	336394	4553148	-70.948629	41.113163	-33.53
WTG_75	338246	4553148	-70.926583	41.113534	-34.85
WTG_76	340098	4553148	-70.904536	41.113901	-34.04
WTG_77	341950	4553148	-70.882489	41.114263	-38.17
WTG_78	343802	4553148	-70.860442	41.114621	-37.25
WTG_79	345654	4553148	-70.838394	41.114975	-37.42
WTG_80	327134	4551296	-71.058333	41.094573	-36.04
WTG_81	328986	4551296	-71.036294	41.094965	-38.35
WTG_82	330838	4551296	-71.014255	41.095352	-36.62

WTG/OSS Location ID No.	NAD83 (2011) UTM Zone 19N		WGS84		Water Depth (Meters) ¹
	Easting (meters)	Northing (meters)	Longitude (DD)	Latitude (DD)	
WTG_83	332690	4551296	-70.992216	41.095736	-37.26
WTG_84	334542	4551296	-70.970176	41.096115	-37.13
WTG_85	336394	4551296	-70.948136	41.09649	-37.49
WTG_86	327134	4549444	-71.057812	41.077901	-34.62
WTG_87	328986	4549444	-71.035779	41.078292	-35.85
WTG_88	330838	4549444	-71.013746	41.07868	-35.50
WTG_89	332690	4549444	-70.991712	41.079063	-35.36
WTG_90	334542	4549444	-70.969678	41.079442	-35.71
WTG_91	336394	4549444	-70.947643	41.079816	-35.84
WTG_92	310466	4555000	-71.257801	41.124198	-33.94
WTG_93	312318	4555000	-71.235756	41.124628	-32.08
WTG_94	314170	4555000	-71.21371	41.125054	-31.40
WTG_95	316022	4555000	-71.191663	41.125476	-31.46
WTG_96	310466	4553148	-71.25723	41.107528	-35.75
WTG_97	312318	4553148	-71.23519	41.107958	-33.72
WTG_98	314170	4553148	-71.21315	41.108383	-32.51
WTG_99	314170	4551296	-71.21259	41.091713	-34.64
WTG_100	314170	4549444	-71.21203	41.075042	-34.6*
OSS_1	327134	4555000	-71.059375	41.127917	-35.64
OSS_2	321578	4564260	-71.128218	41.210072	-34.39

¹ Preliminary Bathymetry Data (Fugro 2019)
* Based on publicly available NOAA data (accessed March 2020).

This table provides a summary of the relevant information for the RWF and RWECS identified in Attachment B of the BOEM's Guidelines for Information Requirements for a Renewable Energy COP.

Device Elements or System	Construction	Operation	Conceptual Decommissioning
Overall Project Description			
Device configuration and how it operates	n/a	See Section 3.5	n/a
Management system and structure	See Section 1.9 and Appendix E		
Remote monitoring system	See Section 3.5		n/a
Transformer platform	See Section 3.3.5	See Section 3.5.2	See Sections 3.6
Shore connections and sea-bottom appurtenances	See Sections 3.3.3, 3.3.4, 3.3.6, and 3.3.7	See Sections 3.5.2 and 3.5.3	See Sections 3.6
Shore facilities	See Sections 3.3.1, 3.3.2, and 3.3.3	See Section 3.5.1	See Sections 3.6
Markings, lighting, and proximity warnings	See Section 3.3.8		n/a
Materials inventory by quantity and physical properties	To be provided as part of the Facility Design Report (FDR)		n/a
Description of Operational Concept			
General concept for construction, operation, and decommissioning	See Section 3.3	See Section 3.5	See Section 3.6
Means of access to offshore structures	See Section 3.3.4		n/a
Maintenance schedule and procedures	n/a	See Section 3.5	n/a
Vessel and aircraft support needed for environmental monitoring and research activities, construction, operations, maintenance, and decommissioning	See Section 3.3.10	See Section 3.5.6	See Section 3.3.10
Noise and vibration levels	See Section 4.1.4 and Appendices P1, P2, and P3.		
Chemical use and management	See Section 3.3.10	See Section 3.5.7	See Section 3.3.10
Potential discharges to the sea and air	See Sections 4.1.6 and 4.1.9, and Appendix T		
Accidental events or scenarios, including non-routine conditions	See Section 1.9 and Appendix E		
Electrical Systems			
Electrical systems (AC and DC)	See Sections 3.3.1, 3.3.2, 3.3.3, 3.3.5, 3.3.6, and 3.3.7	See Sections 3.5.1 and 3.5.2	See Section 3.6
Heating and cooling systems	Temporary fans, heaters, and air-handling units may be installed to provide suitable working conditions during construction.	Heating, ventilation, and air conditioning will be provided by integral HVAC systems that are supplied within the OSSs and WTGs.	n/a
Power requirements	Generators will be used to power tools and equipment needed. See Sections 3.3.1.1, 3.3.5.1, 3.3.8.1 for information on emergency generators	Power for operation will normally be supplied by the WTG. During periods in which wind power is not available, minimal shore power will be supplied to each WTG and the OSSs.	The power requirements for decommissioning will be the same as for construction.
Grounding and Lightning Protection	Grounding will be provided by the site grounding grid. All equipment will be connected by bonding conductors to the ground grid.	Main grounding will be the platform structure. All equipment will be grounded to the platform with bonding conductors. Lightning protection of WTG may vary depending on the WTG selected, and will be reviewed by the CVA as part of the FDR.	n/a
Power conversion system	The power conversion devices and gearboxes may vary depending on the WTG selected, and will be reviewed by the CVA as part of the FDR.		n/a

Device Elements or System	Construction	Operation	Conceptual Decommissioning
Energy storage and/or emergency power	See Sections 3.3.1.1, 3.3.5.1, 3.3.8.1 for information on emergency generators Installation vessels will provide energy storage in the form of fuel. Some vessels may have generators for emergency power.	See Sections 3.3.1.1, 3.3.5.1, 3.3.8.1 for information on emergency generators	The energy storage and emergency power for decommissioning will be will the same as for construction.
Subsea cables	See Sections 3.3.3, 3.3.6, and 3.3.7	n/a	See Section 3.6
Mechanical Systems			
Power conversion devices and gearboxes	n/a	The power conversion devices and gearboxes may vary depending on the WTG selected, and will be reviewed by the CVA as part of the FDR.	n/a
Hydraulic systems	See Sections 3.3.3.2 and 3.3.4.2 for information on vibratory and impact pile driving.	Hydraulic systems will be used in the WTGs (e.g., for the pitch system) and for bolt tensioning tools.	The hydraulics systems for decommissioning will be similar as used for construction.
Foundation and/or Mooring Systems			
Installation and removal procedures for all bottom-founded and installed structures	See Sections 3.3.3, 3.3.4, 3.3.6, and 3.3.7	n/a	See Section 3.6
Corrosion protection system	For the RWF, exterior corrosion protection will vary depending on the WTG selected for the project. Corrosion protection may take the form of cathodic protection, marine coatings, or corrosion resistant materials selection in compliance with industry standards and best practices. For the RWEC, the cable will be constructed of corrosion resistant materials, including sealants, coatings, and armoring.		n/a
Antifouling system	Project structures are designed for the offshore environment and it is not anticipated that antifouling chemicals will be used.		n/a

Plan and profile maps for the RWECC are provided below.

Conceptual engineering design drawings for foundations and subsea cables are provided below.

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