ANBARIC

Scaling Renewable Energy

New Jersey Offshore Wind Transmission Proposal

New Jersey Board of Public Utilities and PJM

NJBPU Supplemental Data Collection Form

Boardwalk Power Option 2.2

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Acronyms and Abbreviations

Abbreviation	Meaning
A&G	administrative and general expenses
AACE	American Association of Cost Engineering
AC	Alternating current
AS2	Atlantic Shores 2 - Offshore lease area 2 in Atlantic Shores

Abbreviation	Meaning
AS3	Atlantic Shores 3 - Offshore lease area 3 in Atlantic Shores
BNL	Brookhaven National Laboratory
BOEM	Bureau of Ocean Energy Management
bps	Basis points
capex	Capital Expenditure
CCS	Convertor Cooling System
COD	Commercial Operation Date
CTV	Crew Transfer Vessel
CWIP	construction work in progress
DEA	Designated Entity Agreement
DNCI	Determination of No Competitive Interest
EA	Environmental Assessment
EENT	expected energy not transmitted
EMF	Electro Magnetic Field
ENR	Engineering New Record
EPC	Engineering, Procurement, Construction
ESA	Environmental Site Assessment
FERC	Federal Energy Regulatory Commission
FONSI	Finding of No Significant Impact
FPA	Federal Power Act
FPP	Fisheries Protection Plan
FTCPA	Firm Transmission Capacity Purchase Agreement
GAP	General Activities Plan
GCT	Global Container Terminals
GIS	Gas Insulated Switchgear
GPR	ground penetrating radar
HDD	horizontal directional drilling
HRG	high-resolution Geophysical
HS1	Hudson South 1 – Wind Energy Area A in Hudson South Call Area
HS2	Hudson South 2 – Wind Energy Area E in Hudson South Call Area
HTV	Heavy Transport Vessel
HVAC	High Voltage Alternating Current
HVDC	High Voltage Direct Current
HVDC-VSC	HVDC voltage source converters
ISA	Interconnection Service Agreement
ISCA	Interconnection Service Construction Agreements
LD	Liquidated Damages
LIPA	Long Island Power Authority
LV	Low Voltage
MBE	Minority Business Enterprise
MMC-VSC	modular multi-level voltage source converter
MSBL	Maximum Seabed Level
MSP	marine spatial planning
MW/MWh	Megawatt(s) / Megawatt-hour(s)
NEPA	National Environmental Policy Act
NJBPU	New Jersey Board of Public Utilities
NLCOE	Net Levelized Cost of Energy
NLCOT	Net Levelized Cost of Transmission

Abbreviation	Meaning
NOAA	National Oceanic and Atmospheric Association
NO_x	Nitrogen oxide
NYPA	New York Power Authority
NYSERDA	New York State Energy Research and Development Authority
O&M	Operation and Maintenance
OEM	original equipment manufacturers
OfCS	Offshore Converter Station
OnCS	Onshore Converter Station
OSP	offshore substation platform
OSV	Offshore Service Vessel
OSW	Offshore Wind
OWF	Offshore Wind Farm
PILOT	payments in lieu of taxes
PJM	PJM Interconnection
POI	Point of Interconnection
POIRS	Integration Reference Scenario
PPA	Power Purchase Agreement
PSEG	Public Service Enterprise Group Inc.
REC	Renewable Energy Certificates
RFI	Request for Information
RFL	radio frequency pipe and cable locators
ROE	Return on Equity
ROV	remotely operated vehicles
ROW	Right of Way
ROW/ROE	right-of-way/right of use easement
RSBL	Reference Seabed Level
RTO	Regional Transmission Organization
SAA	State Agreement Approach
SCADA	Supervisory Control and Data Acquisition
SMA	Seasonal Management Areas
SOV	Service Offshore Vessel
SO_x	Sulfur oxide
SSCV	Semi-Submersible Crane Vessel
STATCOM	static synchronous compensator
SWL	Safe Working Load
TRL	technology readiness level
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
WEA	Wind Energy Area
WTG	Wind Turbine Generator

NJBPU Requested Information Cross Reference Table

BPU Requirement	Document Location
Project Proposal Identification	**Section 2**
Project Summary	**Section 3**
• Narrative description of the proposed project(s) and options	Section 3.1

BPU Requirement	Document Location
• Document the projected benefits in terms of design	Section 3.1.2, Section 3.1.3, Section 3.1.4, Section 3.2.1
• Document the projected benefits in terms of flexibility	Section 3.2.4, Section 3.2.4.1
• Document the projected benefits in terms of ratepayer costs	Section 3.2.3, Section 5
• Document the projected benefits in environmental impacts	Section 7.1, Section 7.2
• Identify major risks and provide strategies to limit risks to NJ customers	Section 6
• Include cost recovery and containment provisions	Section 5.2, Section 5.3
Narrative Description of Proposed Project(s)	**Section 3.2**
• Describe primary technical features	Section 3.2.1
• Interconnection points (default or alternative POIs) and the associated transfer capability	Section 3.1.1
• Timeframe for development	Section 3.2.2
• How the project(s) will support New Jersey's policy to cost-effectively develop 7,500 MW of offshore wind	Section 3.2.3
Project Optionality, Flexibility, and Modularity	**Section 3.2.4**
• Ability of project proposals to achieve efficient outcomes through combinations of solutions for Options 1a, 1b, 2 and 3 needs, or ways in which proposed solutions, or portions of proposed solutions, can be combined, integrated, and sequenced to more cost effectively achieve the State's overall public policy and risk mitigation objectives	Section 3.2.4.1
• Ability of the proposed solution to accommodate future increases in offshore wind generation above current plans	Section 3.2.4.2
• Innovative solutions that yield a transmission investment schedule that is optimally aligned with the planned schedule of offshore wind generation procurements	Section 3.2.2, Section 3.2.3
Interdependency of Options	**Section 3.2.5**
• Describe whether selection of another specific proposal will impact this proposal, and if so – how.	Section 3.2.4.1
• Describe whether your project is severable, and the conditions that would be associated with selection of this single proposal	Section 3.2, Section 5
• Describe any benefits to cost, cost-containment mechanisms, phasing, or other relevant elements of the proposal that would stem from co-selection of other proposals.	Section 5.1.1. Section 5.2
• Explain any benefits from selection of multiple proposals that may not be available if a single proposal is selected	Section 5.1.1
Overview of Project Benefits	**Section 3.2.6**
Overview of Major Risks and Strategies to Limit Risks	**Section 3.2.7**
Overview of Project Cost, Cost Containment Provisions, and Cost Recovery Proposals	**Section 3.2.8**
Reliability Benefits	**Section 4**
• Project's ability to satisfy any applicable reliability criteria that may impact the evaluation of the project even if it was	Section 4.1, and Attachment 1 Analysis Report

BPU Requirement	Document Location
not explicitly stated as part of the original problem statement.	
Project's ability to provide additional benefits associated with reliability criteria, including: • Reduced need for must-run generation and special operating procedures, • Extreme weather outages and weather-related multiple unforced outages, • Reduced probability of common mode outages due to electrical and non-electrical causes, • Islanding, • Power quality degradation	Section 4.1 , and Attachment 1 Analysis Report
Public Policy Benefits	**Section 4.2**
Project's ability to maximize the energy, capacity, and REC values of offshore wind generation delivered to the chosen POIs, including: • Reduce total costs of the offshore wind generation facilities (including generator leads to the offshore substations), • Mitigation of curtailment risks, • Level and sustainability of PJM capacity, congestion, or other rights created by the proposed solution that increase the delivered value of the wind generation or provide other benefits.	Section 4.2
• Project's ability to accommodate future increases in offshore wind generation above current plans	Section 3.2.4.2
Market Efficiency Benefits	**Section 4.3**
• Ratepayer cost savings (the primary evaluation metric), production cost savings, or other benefits	Section 4.3, Section 5.0
• Transmission system benefits, such as synergies with transmission facilities associated with ongoing OSW procurements, replacement of aging transmission infrastructure, and other transmission cost savings to New Jersey customers	Section 4.1
• Capacity market benefits, that may give rise to New Jersey ratepayer cost savings (which is the primary evaluation metric), including through CETL increases, improved resiliency/redundancy, avoided future costs (such as future reliability upgrades or aging facilities replacements)	Section 4.3
• Other benefits, including State energy sufficiency, reduced emissions, less dependence on fossil-based thermal resources, improvements in local transmission and distribution outages, improvements in local resiliency	Section 4.4
• Attach any relevant supporting analyses and benefits quantifications (including assumptions and analyses, if any) to support the benefits described above that have not been already submitted through the PJM submission forms	Attachment 1 Analysis Report Attachment 2 Cost Benefit Analysis Attachment 10 System Reliability Analysis
Proposal Costs, Cost Containment Provisions and Cost Recovery	**Section 5**

BPU Requirement	Document Location
• Any additional cost information not included in PJM's submission forms, including ongoing capital expenditures	N/A
• For the cost estimates submitted via PJM's submission forms, the cost estimate classification and expected accuracy range consistent with AACE International standards	Section 5.4
• The estimated energy losses of the proposed facilities	Section 5.5
• The physical life and/or economic life (i.e., length over which the facility will request cost recovery) of the facilities	Section 5.6
• A description of each cost structure proposed for the project, including cost containment mechanisms and cost recovery approach	Section 5.2, Section 5.3
• If a fixed revenue requirement is being requested, files specifying the annual revenue requirements over the economic life of the proposal. Similar to the proposed cost cap mechanisms submitted to PJM, please include proposed contractual revenue requirement commitment language to be included in the Designated Entity Agreement. The Contractual revenue requirement commitment language must be identical to that submitted in the PJM Competitive Proposal Template	N/A
• Please explain how the costs of the proposed projects may be impacted by selection of a subset of the options versus the entire proposed project	Section 5.1.1
• Please explain any additional cost control mechanisms provisions for the BPU to consider that were not included in the PJM submission forms	Section 5.2
Project Risk and Mitigation Strategy	**Section 6**
• Project's plan for site control and the ability to achieve site control	Section 6.1
• BOEM issuance of a right-of-way, a right of use and easement	Section 6.2
• Discuss the project stakeholder engagement plan's ability to minimize public opposition risk from the fishing industry, coastal and beach communities, and other stakeholder groups.	Section 6.3
• Identify any construction techniques will be needed – benthic substrate, long HDD spans, existing cables, pipelines or other infrastructure, sandwaves/megaripples, contaminated sediment, dredging, or onshore waterbody crossings – that may result in project delays or cost overruns	Section 6.4
• Identify known or potential time of year restrictions on construction activity, particularly related to listed species or beach restrictions.	Section 6.6
• Identify compensatory mitigation estimates needed for wetland impacts and any potential risk with availability of wetland credits.	Section 6.7
• Identify supply chain constraints or material procurement risks that may impact the project.	Section 6.8

BPU Requirement	Document Location
• Identify project-on-project risks related to the timing or completion of other transmission and offshore wind projects built to achieve the New Jersey public policy requirement.	Section 6.9
• Describe and provide proposed contractual language for any project schedule guarantees, including but not limited to guaranteed in-service date(s), financial assurance mechanisms, financial commitments contingent on meeting targeted commercial online dates, and delay damage or liquidated damage payment provisions, that have been proposed.	Section 6.10, Section 6.10.1
• Identify any additional risks associated with the project that could lead to increased costs, reduced project benefits (reliability, market efficiency, and/or public policy), or delayed development and delivery of the proposed offshore wind generation.	Section 6.11
• Provide any relevant technical studies or documentation related to efforts taken to mitigate the risks identified above	Section 6.12
Environmental Impacts and Permitting	**Section 7.0**
Include an Environmental Protection Plan which describes all associated onshore and/or offshore environmental impacts from the planning, construction, and operation phases of the project, including, but not limited to: • Physical Resources • Biological Resources • Cultural Resources • Socioeconomic Resources • GIS Desktop Study of potential impacts to sensitive resources including tabular summaries of acreage and distance calculations • Shapefiles of cable routes, landfall locations, offshore platforms, and onshore interconnection points that show: • Width of individual cable routes or shared power corridors • Footprint of onshore substation including expansion needed and acreage calculations of habitat disturbance, especially related to wetlands, forested areas, or other sensitive habitats • Descriptions of cable installation methods with locations identified • General footprint and extent of Horizontal Directional Drilling (HDD) boreholes and cable landings • Footprint and extent of associated pre-construction and construction activities • Projected vessel traffic and/or vehicles needed for project surveys, construction, operation, and project closeout	Section 7.1, and Attachment 15 Environmental Protection Plan

BPU Requirement	Document Location
including emissions estimates from vessel and/or vehicle activity • Any needed exclusion zones around project infrastructure including offshore platforms • Plan to address the identified impacts described above, including innovative measures to avoid, minimize or mitigate impacts.	
Environmental Benefits: anticipated environmental benefit of a particular transmission proposal in comparison to radial lines: • How does the project reduce environmental impacts to fisheries, habitat, and sensitive resources in comparison to radial lines? • What is the reduction in impacts (approximate area) compared to radial lines, temporary and permanent? • A description of whether and how the project infrastructure, including offshore platforms, could provide direct ocean and ecological observations throughout the water column	Section 7.2, and Attachment 16 Environmental Benefits
Fisheries Protection Plan: • A scientifically rigorous description of the marine resources that exist in the Project area, including biota and commercial and recreational fisheries, that is informed by published studies, fisheries-dependent data, and fisheries-independent data, and identifies species of concern and potentially impacted fisheries. • A scientifically rigorous plan to detect impacts to marine resources, including biota and recreational and commercial fisheries. • Identification of all potential impacts on fish and on commercial and recreational fisheries off the coast of New Jersey from pre-construction activities through project close out. • A plan that describes the specific measures the Applicant will take to avoid, minimize, and/or mitigate potential impacts on fish, and on commercial and recreational fisheries. • An explanation of how the Applicant will provide reasonable accommodations to commercial and recreational fishing for efficient and safe access to fishing grounds. • A description of the Applicant's plan for addressing loss of or damage to fishing gear or vessels from interactions with	Section 7.3 Attachment 17 Fisheries Protection Plan

BPU Requirement	Document Location
offshore wind structures, array or export cables, survey activities, concrete mattresses, or other Project-related infrastructure or equipment.	
• Provide an analysis showing that project infrastructure will not impact overburdened communities in a disproportionate fashion.	Section 7.4.1 and Attachment 15 Environmental Protection Plan
Permitting plan: provide a description of the applicant's permitting plan that includes the following: • Identify all local, State and/or Federal permits and/or approvals required to build and operate the Project and the strategy and expected time to obtain such permits and/or approvals. • Provide documentation of consultation with USACE beach replenishment projects and sand borrow areas, if applicable. • Identify all applicable Federal and State statutes and regulations and municipal code requirements, with the names of the Federal, State, and local agencies to contact for compliance. • Submit a land use compatibility / consistency matrix to identify local zoning laws and the consistency of applicant's activities in each local jurisdiction. • Identify each appropriate State or Federal agency the Applicant has contacted for land acquisition issues and provide a summary of the required arrangements. • Include copies of all submitted permit applications and any issued approvals and permits; and • Include copies of all filings made to any other regulatory or governmental administrative agency including, but not limited to, any compliance filings or any inquiries by these agencies.	Section 7.5, and Attachment 18 Permitting Plan
DEP Checklist	Attachment 14 DEP Checklist

1 Qualification Statement

Anbaric Development Partners, LLC, with its investors, respectfully responds to the PJM and New Jersey Board of Public Utilities State Agreement Approach solicitation for up to 7,500 megawatts of transmission for offshore wind. Anbaric's investors include:

- The Ontario Teachers' Pension Plan Board ("Ontario Teachers'") - Canada's largest single-profession pension plan with more than $221 billion (Canadian) of assets under management
- Ferreira Construction, Co. Inc. ("Ferreira") - one of New Jersey's largest civil and utility construction contractors

In this document, "Anbaric" or "the Company" refers interchangeably to both Anbaric Development Partners, LLC and Anbaric's predecessor entities that have successfully developed electric transmission projects, as described below in Section 1.1.3 and 1.1.4.

Anbaric brings a formidable record of developing underground and underwater high-voltage direct current (HVDC) transmission systems in New Jersey and New York, financing electricity infrastructure projects, building projects on time and on-budget, and operating and maintaining transmission systems consistent with the highest commercial and regulatory standards. This track record confirms that the transmission system(s) awarded under the State Agreement Approach (SAA) Solicitation will be designed, developed, financed, built, and operated as specified, while protecting the environment and the New Jersey ratepaying public. These systems will catalyze the growth of the offshore wind industry in New Jersey and will spur its development along the Atlantic Coast.

Together, Anbaric, Ontario Teachers', and Ferreira offer a new business model to New Jersey and the offshore wind industry: diverse experience presenting solutions for transmission infrastructure that reduces costs to ratepayers while protecting the environment and stimulating competition among offshore generators – both first movers and new entrants. This business model includes a new minority-owned, New Jersey-headquartered business as an investor and construction partner. This partnership will provide to an inclusive, efficient, and productive future for New Jersey's offshore wind industry and its accompanying private sector investments and job growth. The following Sections provide Anbaric's development experience and each investor's relevant experience in more detail.

1.1 Anbaric

Anbaric[1] is a majority employee-owned, American company headquartered in Massachusetts that has more than two decades of development experience in New Jersey. Anbaric is an Ontario Teachers' Platform Company, 60% owned by Anbaric AP3, and 40% owned by Ontario Teachers' through its Tx Grid 1 LLC subsidiary. Anbaric's business model (i.e., a lean, multi-skilled team)

[1] https://anbaric.com/

keeps overhead to a minimum and focuses spending on development rather than overhead, maximizing value to the ratepayer.

Anbaric was formed in March 2017 as a joint venture between Anbaric AP3, LLC and Tx Grid 1 LLC (a wholly owned subsidiary of Ontario Teachers'). Through this subsidiary, Ontario Teachers' is committed to funding development and capital costs of Anbaric projects. Anbaric and Ontario Teachers' have invited Ferreira to become a minority investor in the projects that Anbaric will submit into the State Agreement Approach (SAA) solicitation.

Anbaric develops transmission projects which link regional markets and bring onshore and offshore renewables to population centers. Anbaric's offshore wind transmission projects include transmission facilities serving a single offshore wind project as well as transmission systems for multiple offshore wind projects. Additionally, the Company develops energy storage projects for the bulk power grid. Anbaric has pipeline of transmission and storage projects in New Jersey, New York, and New England in various stages of development.

Anbaric worked to spearhead the development of two 660 megawatt (MW) HVDC projects, the Neptune Regional Transmission System ("Neptune"), operational in 2007, and the Hudson Transmission Project ("Hudson"), operational in 2013. Each project was completed on time and on budget with a total capital expenditure (capex) of over $1.5 billion.

Anbaric has a demonstrated record of working with union labor for our projects. Both Neptune and Hudson were fully union projects and engaged locals of numerous trades, and we are committed to doing the same on all projects moving forward.

More recently, in June 2021, Anbaric and Mayflower Wind, LLC ("Mayflower"), a developer of offshore wind generation projects backed by Shell, EDPR, and Engie, completed a transaction for Anbaric's 1,200 MW of transmission assets under development. This transaction will enable the Mayflower offshore wind farm to connect into Brayton Point, the site of a former coal plant in Somerset, Massachusetts.

Anbaric is a Designated Entity under the PJM tariff and is the entity formally responding to the SAA solicitation.

1.1.1 Anbaric's Vision

Since the Northeastern United States first started discussing the possibility of an offshore wind industry, Anbaric has been a leading voice advocating a "**transmission-first**" approach to developing offshore wind projects first by planning transmission infrastructure to launch the industry and then creating an offshore grid to meet the transmission needs of a large and growing industry. The transmission-first approach reduces the risks involved in developing offshore wind generation by planning and streamlining the most complex part of the development process – connection to the onshore grid. This approach protects the environment by minimizing the number of transmission links to shore and ensures that each interconnection point absorbs as much offshore wind as possible. Importantly, the transmission-first approach reduces costs to ratepayers by providing every generator an equal ability to secure transmission on open-access transmission systems, thus creating a levelized competition among early entrants to the US market and more recent entrants.

This approach has worked effectively in Germany, The Netherlands, and Belgium, and is now being embraced by Great Britain.

Following the creation of planned, open-access transmission infrastructure, the type of transmission envisioned in the State Agreement Approach solicitation, the next stage in the transmission-first approach is the development of an offshore grid. This step builds on open-access transmission infrastructure readily developed with current technology and includes a series of transmission links bringing renewably generated electricity to shore, connections among those links, and offshore substation platforms that emulate the core capabilities of the onshore grid. The core capabilities of an offshore grid and their benefits include:

- **Multiple paths to deliver electricity to load centers** and corresponding reliability benefits, preventing loss of generated electricity due to one down transmission line.
- **Almost instantaneous ability to clear faults**, reducing equipment damage, high power quality, better safety, and high-power system transient stability.
- **Efficiency of scale** that a grid provides allows offshore wind to flow to the onshore grid though multiple paths to various destinations. This substantially reduces losses due to curtailments and outages, which is especially significant when delivering electricity from intermittent resources.

Finally, an offshore grid, if well-conceived and designed, can complement the onshore grid, and increase its operational capabilities and resilience. The National Academy of Engineering recognized that the onshore grid was the greatest engineering achievement of the 20th century[2] and Anbaric respectfully believes that adding the flexibility of an offshore grid to the strength of the onshore grid increases reliability, serves interests of ratepayers in low-cost solutions, and addresses the emerging needs of a low carbon economy.

The time to create a true offshore grid is upon us. With the commercial deployment of DC breakers and full bridge converters, an offshore grid can be designed and built today. However great the benefits of such an offshore grid, Anbaric recognizes that there are cost implications of deploying these technologies now. The offshore grid will develop and, as new links and offshore platforms are added, will grow organically, in stepwise fashion and in lockstep with an evolving offshore transmission need; just as the onshore grid itself developed. Therefore, Anbaric proposes the first step towards a true offshore grid within the Boardwalk Power Portfolio. Table 1-1 details the benefits of transmission-first development as compared to traditional development.

Table 1-1 Transmission-First Development

Transmission-First	Status Quo
• OWFs compete on basis of ability to develop OWFs at lowest possible cost	• OWFs compete on basis of location and first-come-first-served assignment of POI

[2] https://www.nae.edu/7461/GreatAchievementsandGrandChallenges

Transmission-First	Status Quo
• Transmission infrastructure is dimensioned to maximize transmission capacity	• Transmission infrastructure is dimensioned for the associated OWF, and not for highest possible circuit capacity
• Transmission infrastructure is design to minimize cost for the New Jersey rate payer	• Transmission infrastructure is design to minimize cost for the OWF developer
• POIs are assigned to ensure the optimized use of available POIs and corridors, and align the integration of offshore wind with onshore grid characteristics in a coordinated way	• POIs are chosen to minimize cost and risk for the OWF developer
• The maximal use of available transmission technologies results in fewer cables and hence minimize environmental impact	• Transmission technologies are chosen to minimize cost and risk for the OWF developer and not to minimize the environmental impact
• The maximal use of available transmission technologies results in fewer cables, landfall sites and onshore construction works and hence minimize adverse impact on local communities	• Transmission technologies are chosen to minimize cost and risk for the OWF developer and not to minimize the adverse impact on local communities
• The offshore transmission network is designed to improved availability where economically advantageous by making use of geographic synergies	• Transmission systems are designed to serve the need of the associated OWFs. Synergies with adjacent (but competing) OWFs are not realized leading to a foregone availability benefit
• Transmission systems are designed for multi-purpose infrastructure use of offshore wind export as well as backbone functionality, improving the return-on-investment	• Transmission systems are designed for the sole function of offshore wind export

The first step consists of establishing an assessment of the current and future transmission need. This is necessary to define common technical transmission characteristics, such as a common transmission technology, voltage levels, and operational philosophy, allowing different offshore links to connect into an integrated system. Next, the offshore substation platforms must be designed with a level of expandability with sufficient space and functionality to install and connect future offshore transmission links. This will enable the first so-called multi-terminal grids to be built, to improve availability and reduce both costly and polluting must-run generation onshore and offshore in case of export link outages. Finally, standards are identified for modular transmission links, a one-size-fits-all design standard, which enables significant cost savings and risk reductions, while offering flexibility to accommodate future scenarios. Together, these move New Jersey substantially in the direction of a true offshore grid by joining the “Option 2” and “Option 3” bid packages in Anbaric’s Boardwalk

Power Portfolio. The next step, which may occur sooner than expected, depending on how quickly technology advances, builds on these approaches and enables Anbaric's transmission system to employ evolving technology to capture the benefits of a true grid. This grid contains multiple offshore connections to New Jersey's and other states' Points of Interconnection (POIs) and delivers offshore wind into different states or different Regional Transmission Organization (RTO) and the offshore grid enables the trade of energy between different points along the U.S. east coast. This offshore transmission grid increases reliability of both the onshore grids and the offshore wind connections by providing multiple transmission paths while improving flexibility by coupling offshore wind farms with multiple onshore POIs. HVDC fault clearing systems such as HVDC circuit breakers, will be installed at important locations to safeguard the continuous supply of clean power to consumers in case of system contingencies, at the lowest cost. Based on the previously defined common technical characteristics, an HVDC system grid code and interoperability guideline further bolster compatibility, opening up the competitive procurement of HVDC equipment from a diverse supply chain.

The resulting multi-terminal, multi-purpose, inter-state and multi-vendor offshore grid enables the large-scale deployment of offshore wind energy, and the economically optimal dispatch of geographically diverse clean energy resources. Offshore wind export, as well as energy trade flows, share the same multi-purpose infrastructure. By coordinating the transmission and offshore wind procurement planning with a long-term planning horizon, impacts on the environment and local communities can be minimized, while strengthening the U.S. energy systems resilience and spurring the creation of a local supply chain.

Without this broader goal of a true offshore grid, New Jersey will be forced to follow the status quo of an incremental approach to an industry that shows enormous potential for large scale job creation, triggering private investment, and accelerating the transformation to a low carbon economy. The time to step towards an offshore grid is now.

1.1.1.1 Anbaric Policy Development

Anbaric advocates a "transmission-first" approach to developing offshore wind projects and the creation of an offshore grid to meet the transmission needs of the industry.

In New Jersey, New York, Connecticut, and Massachusetts, as well as at industry conferences and with stakeholders ranging from recreational and commercial fishing organizations to environmental organizations, community groups, and local governments, Anbaric has identified the energy, economic, and environmental benefits of planned, open-access transmission systems to serve the offshore wind industry and the ratepaying public. This work has included advocating for the separate procurement of offshore wind transmission and generation, incorporating lessons from transmission systems in the Netherlands, Germany, Belgium, and Great Britain into the development of policies here in the northeastern United States, identifying the trade-offs among policy approaches to transmission development, comparing the benefits of HVAC and HVDC technology, and urging states, RTOs, and ISOs to develop plans to connect substantial amounts of offshore wind while protecting the environment, minimizing costs to ratepayers, and utilizing every point of interconnection up to its electrical capacity.

Anbaric respectfully submits that the Company has helped certain states and the federal government develop a more complete understanding of the multiple benefits of planned, open-access transmission and how a transmission-first approach can accelerate the growth of the offshore wind industry.

1.1.2 Project Experience

Anbaric's two decades of experience in New Jersey has familiarized the Company with every aspect of transmission development in the state. Anbaric has helped complete large, complex transmission projects in the most densely populated, environmentally sensitive, and logistically difficult places to construct linear projects in New Jersey: in the Raritan River, Raritan Bay, outer New York Harbor, Bergen County to the edge of the Hudson River, and in the Hudson River to the boundary with New York State.

1.1.2.1 The Neptune Regional Transmission System

Anbaric and the Atlantic Energy Partners team developed the Neptune Project[3] ("Neptune"): a 660 MW (500 kV) HVDC submarine electric transmission cable that connects power generation resources in the PJM system to electricity consumers on Long Island as seen in Figure 1-1. The cable extends 65 miles (mi) (105 kilometers [km]) from the First Energy substation in Sayreville, New Jersey to the Long Island Power Authority's (LIPA's) Newbridge Road substation in Nassau County, New York. This project was completed ahead of schedule and under budget.

The capital cost for Neptune was approximately $600 million. Neptune was the second project to receive FERC approval under the Federal Power Act (FPA) Section 205 for a Negotiated Rate Tariff and later participated in a competitive LIPA RFP in which it was selected in 2004. Neptune subsequently executed a 20-year Firm Transmission Capacity Purchase Agreement (FTCPA) with the Long Island Power Authority for Neptune's transmission capacity. This off-take agreement with LIPA provided the financial basis for the project's debt and equity financing. After separate and highly competitive tenders for project equity and project financed debt, the project closed financing on July 15, 2005. The project debt at closing was investment grade and the project was recognized as North American Infrastructure Project Finance Deal of the Year in 2005 by Institutional Investor Magazine. Neptune began commercial operations in June 2007.

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[3] www.neptunerts.com

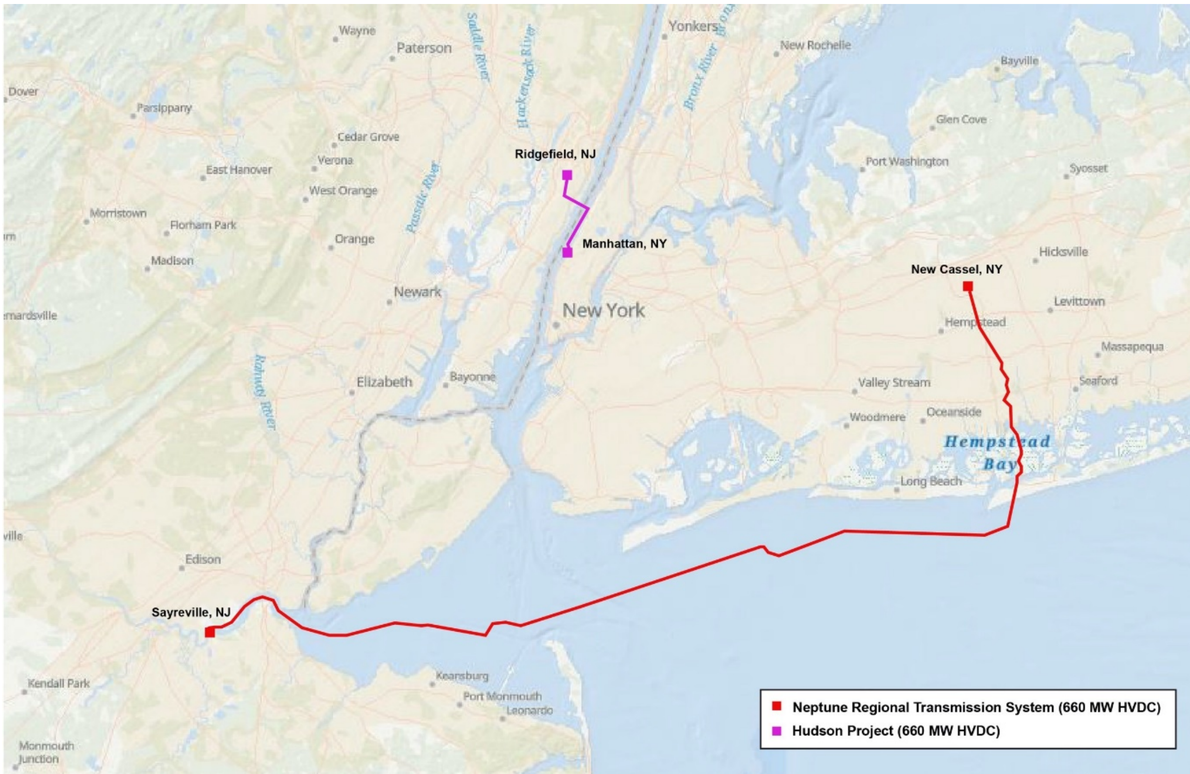

Figure 1-1 Neptune Project and Hudson Project routes

1.1.2.2 The Hudson Transmission Project

Mr. Krapels, the founder of Anbaric, was also a founder of Hudson Transmission Partners, LLC, the developer of the Hudson Transmission Project[4] ("Hudson"): a 660 MW HVDC system between New York City and PJM Interconnection. This transmission system provides a source of electric power for the New York City customers of the New York Power Authority (NYPA) and access to renewable resources throughout PJM. Hudson has back-to-back converter stations in Ridgefield, New Jersey and connects to the New York City grid at Con Ed's West 49th Street substation via an alternating current (AC) cable installed underground in railroad rights of way in Bergen County and then beneath the Hudson River and across the West Side Highway and into the substation.

The capital cost for Hudson was over $800 million. The project was selected by NYPA and Hudson entered into an FTCPA with NYPA. It was project financed via a long-term contract with NYPA and began commercial operations in June 2013.

The existence of a 20-year FTCPA with NYPA and the Anbaric development team's experience with the Neptune project provided the basis for the equity and non-recourse project debt. The same equity investors from Neptune provided the project equity for Hudson. The project was constructed using local union labor, including, but not limited to, members of the International Union of Operation

[4] www.hudsonproject.com

Engineers (IUOE), International Brotherhood of Electrical Workers (IBEW), Pipefitters, and Laborers. Pipefitters, and Laborers.

1.1.2.3 The Brayton Point Renewable Energy Center

In June 2021, Anbaric and Mayflower Wind, LLC completed a transaction for Anbaric's 1,200 MW of transmission assets under development which will enable the Mayflower offshore wind generation project to connect at the Brayton Point substation, the former site of New England's largest coal plant, along the southern Massachusetts coastline in Somerset, MA. Mayflower Wind, LLC is a developer of offshore wind generation projects backed by Shell New Energies[5], the renewable development subsidiary of Portugal's utility, EDP Renewables[6], and Engie.

1.1.3 Current Projects

1.1.3.1 Offshore Wind Transmission Systems into New York

Anbaric continues to develop transmission systems for future offshore wind injections into Long Island, New York and New York, New York.

On Long Island, Anbaric is developing an interconnection position at Ruland Road, a 138 kilovolt (kV) substation in the heart of Long Island's load pocket. The Company selected this location several years ago as an ideal interconnection point for substantial injections of power. A permittable route to the coast has been identified which also has community support. Anbaric has worked with state and local government authorities to place the route in state, county, and municipal rights of way (ROW). Anbaric now manages the interconnection process for its 1,200 MW HVDC interconnection into Ruland Road, has received a System Reliability Impact Study, and expects to enter Class Year 2022. The company maintains site control for its converter station site and has extensive community, governmental, and stakeholder relation commitments.

In New York City, Anbaric is developing its interconnection position at the Gowanus substation, Con Ed's 345 kV substation close to Brooklyn's waterfront. Anbaric selected this location as an ideal location for the injection of offshore wind because of its ability to absorb large amounts of energy, and its proximity to New York harbor. Anbaric now manages the interconnection process for 1,200 MW HVDC interconnection into Gowanus, has received a System Reliability Impact Study, and expects to enter Class Year 2022. Anbaric is preparing an Article VII permit application, maintains site control for its projected converter station, is selecting its preferred marine and terrestrial routes, and maintains its community, governmental, and stakeholder relation commitments which complement similar work on Long Island.

1.1.3.2 NY Public Policy for Transmission Need Project

In 2018 Anbaric participated in a public policy planning process with NYISO. Anbaric recognized and stated the challenges of injecting offshore wind into New York, particularly Long Island, and the resulting need to transmit this power to load centers.

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[5] https://www.shell.com/energy-and-innovation/new-energies.html
[6] www.edpr.com/en

In the summer of 2021, NYISO issued Public Policy Transmission Needs (PPTN) solicitation to address this very issue - solutions to transmission needs to meet Long Island's additional transfer capacity, allowing it to absorb increased amounts of offshore wind energy and efficiently move the power around the state. Anbaric plans to present solutions, solutions that Anbaric has been developing for a number of years, in a submission package due later this fall.

1.1.3.3 Long Island Storage Center

Anbaric recently submitted project proposals for 1,000 MWh of battery storage in response to the 2021 Request for Proposals (RFP) for "Bulk Energy Storage" issued by Public Service Enterprise Group Inc. (PSEG) Long Island on behalf of the Long Island Power Authority (LIPA). The proposals cover development, design, financing, building, owning, and operating three battery storage installations, sited on Brookhaven National Laboratory's (BNL) property and a LIPA peaker site. The projects will provide significant research and educational benefits through BNL's Center for Grid Innovation, and the LIPA supported Jones Beach Energy and Nature Center. The development team includes Ontario Teachers', Tesla (technology partner), and BNL (project host and research partner). We anticipate an award decision in the coming six months.

Anbaric is working with Tesla on multiple storage projects. This relationship helps to ensure that our projects have the optimal technology at the lowest cost.

1.1.3.4 [redacted]

[redacted]

[redacted]

[redacted]

1.1.4 Key Employees

Anbaric's Project development qualifications include the significant experience of its Senior Management staff.

[redacted]

Clarke Bruno

Clarke Bruno is Chief Executive Officer of Anbaric. He has twenty-five years of private and public sector experience in energy development and law. He joined the company in 2010 as its general counsel and became President of Transmission in 2017.

Prior to joining Anbaric, Mr. Bruno served as energy and environmental counsel to New Jersey Governor Corzine where he helped draft the energy master plan and increase investment in the grid. During New York City Mayor Bloomberg's first term, Mr. Bruno led the effort that won dismissal of multiple, decades-old class action lawsuits. Before entering government, he practiced law for nine years following a federal clerkship. Mr. Bruno chaired the NYC Bar Association's energy committee from 2012-2015.

Mr. Bruno graduated with honors from Swarthmore College where he won a Watson fellowship to study in Ghana and Brazil and cum laude from New York University School of Law where he was awarded a Hays fellowship.

Mr. Bruno will remain ultimately responsible for the development of Anbaric's project(s) awarded under the State Agreement Approach solicitation.

Timothy L. Vaill

Timothy L. Vaill is Anbaric's Chief Financial Officer, responsible for overseeing the firm's capital structure, financial planning, and financial management. He is the key liaison with Anbaric's co-owner and investment partner, Ontario Teachers'.

Mr. Vaill is the former Chairman and Chief Executive Officer of Boston Private Financial Holdings, Inc., a publicly owned investment management and banking company. He held this position for 17 years. Prior to this role, Mr. Vaill was an Executive Officer for an American Express subsidiary, The Boston Company, and a senior financial consultant for Fidelity Investments in Boston. Mr. Vaill also served on the Economic Development Team for the Commonwealth of Massachusetts under Governor Deval Patrick prior to joining Anbaric.

Mr. Vaill holds an MBA in Finance from the Harvard Business School, a Master's in Public Administration from the Harvard Kennedy School and a B.S. degree in Mathematics from Tufts University. He serves on several boards and was formerly the Chairman of the Economic Development Council for the Town of Andover, where he resides. He continues to serve as a member of the Investment Committee for the Massachusetts $75 billion State Pension Fund, MassPRIM.

Mr. Vaill will be responsible for the financial performance of Anbaric's project(s) awarded under the State Agreement Approach solicitation.

Janice Fuller

Janice Fuller is President, Mid-Atlantic with Anbaric where she leads the Company's transmission development work in New Jersey and New York.

Prior to joining Anbaric, Ms. Fuller served as Chief of Staff to Congressman and House Energy and Commerce Committee Chair Frank Pallone (NJ-06), where she oversaw staff executing legislation ranging from telecom to environmental issues. She has also held roles as Director of Cabinet Affairs in the administration of Governor Jon Corzine where she oversaw the operations of several state departments and as the Executive Director of a state political party.

Ms. Fuller graduated with honors from Boston University. She is an elected member of the Board of Education in her hometown of Ocean, New Jersey, as well as serving as a board member of the Boys & Girls Club of Monmouth County.

Ms. Fuller will lead the development of Anbaric's project(s) awarded under the State Agreement Approach solicitation.

Howard Kosel

Howard Kosel is a Partner and Project Manager with more than 40 years of experience in the energy industry. Prior to joining Anbaric, Mr. Kosel was a Managing Director at Abatis Capital LLC, where he served as the Asset Team Lead responsible for asset valuation, market analysis and due diligence of prospective investments.

Mr. Kosel held a number of leadership positions while working at KeySpan Corporation including Senior Vice President of the unregulated subsidiary KeySpan Energy Development Corporation, and Vice President of Generation Operations. KeySpan's growth during Mr. Kosel's tenure included: acquisition of the 2,168 megawatt Ravenswood Generating facility located in New York City; the development and construction of the Ravenswood 40, a 250 megawatt natural gas fired combined cycle facility; and the development and construction of 160 megawatts of peaking power plant projects on Long Island.

At KeySpan, Mr. Kosel additionally held many senior operating positions in electric generation including plant manager and chief engineer. He also served as Manager of Electric Design and Construction for transmission and distribution.

Mr. Kosel oversees the company's technology operations and will have a key role in developing Anbaric's project(s) awarded under the State Agreement Approach solicitation.

Greg Pratt

Greg Pratt serves as a senior financial and development advisor to Anbaric and the principal of GAP Advisors LLC, a development, finance and strategy consulting and advisory firm. He is an international energy sector executive with more than 30 years of experience in finance, project development, strategy, and general management. In addition to the US, he has lived and worked in the UK and in Australia. He has been actively involved in the development, financing, construction and operation of power generation, pipeline, natural gas compression and transmission projects in more than a dozen countries on four continents.

Prior to GAP Advisors, Greg held a variety of leadership roles over a span of 25 years with InterGen Services, Inc., an international energy company. During that time Greg served as Chief Financial Officer, Head of Development and Strategy, and Managing Director of InterGen's Australia business among other roles.

He earned degrees from Claremont McKenna College and Massachusetts Institute of Technology. Mr. Pratt will assist in the financing and development of Anbaric's project(s) awarded under the State Agreement Approach solicitation.

Bryan Sanderson

Bryan Sanderson is a Partner and Project Manager, and he brings over two decades of experience in energy markets, with a strong background in both the natural gas and power sectors. Prior to joining Anbaric, he held roles in project development and energy marketing with Invenergy, an IPP specializing in the development of wind and natural gas generation assets. In these roles he was responsible for early-stage development activities, as well as hedging risk and market modeling for assets approaching or in commercial operation.

Before moving to the asset side of the energy business, Mr. Sanderson provided consulting and market advisory services to a range of clients across the energy value chain and held a position on the energy trading desk of a major hedge fund. He was responsible for modeling supply, demand, price, basis, analyzing numerous market-related issues and communicating his views on the markets to clients and traders.

Mr. Sanderson holds a B.S. and M.S. in Chemical Engineering from MIT, and an MBA from the Kellogg School of Management at Northwestern University.

Mr. Sanderson will join in the financial, technology, and operational work in developing Anbaric's project(s) awarded under the State Agreement Approach solicitation.

Theodore Paradise

Theodore Paradise is the Executive Vice President of Transmission Strategy & Counsel and Partner at Anbaric. Mr. Paradise brings over 20 years of experience responding to regulatory and practical issues surrounding power system planning and operations. At Anbaric, Mr. Paradise helps to identify how transmission and energy storage can enable the transformation of the power grid and scale renewable energy across North America. Mr. Paradise also oversees related federal policy and regulatory matters.

Prior to joining Anbaric, Mr. Paradise spent 15 years at ISO New England Inc., where he served as Assistant General Counsel, Operations & Planning. In that role, Mr. Paradise oversaw legal issues related to power system operations, generator interconnection and regional and interregional transmission planning – including competitive transmission, transmission siting and cost allocation.

Prior to joining the ISO, Mr. Paradise was an attorney with the energy practice group of Swidler Berlin Shereff Friendman LLP in Washington, DC where he represented an independent grid operator and investor-owned public utilities.

Mr. Paradise received his Juris Doctor degree from Georgetown University Law Center and his BA from the University of Idaho.

Mr. Paradise will oversee the legal and regulatory aspects of developing Anbaric's project(s) awarded under the State Agreement Approach solicitation.

Soam Goel

Soam Goel is a Senior Partner with Anbaric. Mr. Goel leads investments in storage, microgrid projects, campus energy infrastructure, and existing energy infrastructure that can be transformed through significant capital investments.

Prior to joining Anbaric, Mr. Goel was the Chief Commercial Officer of Power Network New Mexico, a wholly owned subsidiary of Goldman Sachs Global Infrastructure Fund (GSIP). He originated the $400M project for GSIP. Mr. Goel founded Enersights in 2004 to provide strategic advice to senior executives of utility companies and financial participants. Prior to that, Mr. Goel spent ten years with PA Consulting and its predecessor firms where he co-headed the energy M&A practice. Under his leadership, the firm conducted assignments such as company, generation, and transmission transactions – $40M to $8B in size – for utilities, industry vendors, investment banks, and private equity. Mr. Goel has experience working for the Unilever Group of Companies as part of their fast track management development program. Mr. Goel received a Bachelor of Technology in Chemical Engineering from the Indian Institute of Technology and an MBA from the University of Texas at Austin.

Mr. Goel resides in Montclair, New Jersey and will assist in the financing and development of Anbaric's project(s) awarded under the State Agreement Approach solicitation.

1.1.5 Additional Team Members

In addition to the key employees listed above, Anbaric has built a network of collaborators including the following New Jersey companies:

- Chiesa Shahinian & Giantomasi
- Fox Rothschild, LLP
- Windels Marx Lane & Mittendorf, LLP
- Kivvit
- Spiezle Architects
- CLB Partners
- The Zen Group (Artie Cifelli)
- SK Partners (Sen Joe Kyrillos)
- Matrix New World Engineering
- Colliers Engineering

1.2 Development Partners

1.2.1 Ontario Teachers'

An independent organization since 1990, Ontario Teachers' invests and administers the pensions of more than 329,000 active and retired teachers in the Province of Ontario. As of December 31, 2020, Ontario Teachers' had net assets of $221 billion Canadian, invested across a mix of public and private equities, bonds, commodities, real estate and infrastructure assets, absolute return strategies, and natural resources. Ontario Teachers' credit rating is Aa1 from Moody's[8] and AA+ from Standard & Poor's[9]. Since 1990, its annualized total-fund net return averaged 9.6%. Ontario Teachers' is well capitalized and can fund the transmission project(s) awarded to Anbaric in this State Agreement Approach solicitation, as well as the other transmission and storage projects in

[8] https://www.moodys.com/credit-ratings/Ontario-Teachers-Pension-Plan-Board-credit-rating-809848977
[9] https://www.otpp.com/investments/investor-relations/credit-rating

Anbaric's development pipeline. It does not need to go to the capital market or seek other investors to raise the cash for development, construction, or permanent equity. Through its investment in Global Container Terminals, Inc. (GCT), Ontario Teachers' New Jersey assets include the Bayonne Container Terminal which was the first container terminal on the East Coast to institute an appointment system, which reduced traffic, CO_2 emissions, and air pollution. Ontario Teachers' representatives serve on GCT's board.

Ontario Teachers' has a specialized Infrastructure and Natural Resources investment department (INR) that invests and manages its infrastructure portfolio. INR takes an active asset management and governance approach to investing, preferring direct investment in private companies within countries that have a stable economic and political environment. Ontario Teachers' targets infrastructure assets that are relatively low-risk and offer long-term, stable returns in line with the requirements of its pension plan. Its infrastructure and natural resources portfolio was valued at approximately $25.2 billion Canadian as of December 31, 2020, and includes airports, water and wastewater utilities, electricity and gas distribution, renewable power generation, container terminals, onshore oil and gas, timberland, and agricultural assets.

Additionally, INR has a team dedicated to renewable and greenfield investments. As part of this mandate INR has invested in several platforms including a transmission development platform and three renewable power platforms, the most recent being Equis Developments, a Singapore based developer of renewable power and waste treatment assets in Asia Pacific. In addition to Anbaric, its other platform companies include those listed in Table 1-2.

Table 1-2 Ontario Teachers' INR Investment Summary

Investments	Location	Timeframe	Description
Transmission Development and Renewable Energy Investments			
BluEarth Renewables	North America	2010 – 2019	Headquartered in Calgary, BluEarth is a private independent renewable power producer, focused on the acquisition, development, construction and operation of wind, hydro, and solar projects. Ontario Teachers' was a founding investor in 2010 and under its ownership grew the platform to 400MW of operating renewable projects and an additional 1,000 MW under development.
Cubico	Global	2015 – Present	Cubico Sustainable Investments is a leading investor in, and long-term owner and operator of, global renewable energy projects, currently operating in 13 countries. The company owns over 3 GW of installed capacity and 114 assets. Established in 2015, the company is jointly owned by Ontario Teachers' and PSP Investments.
Equis Developments	Asia Pacific	2020 – Present	Equis is focused on developing, constructing and operating renewable energy and biomass generation, electric distribution and transmission and waste infrastructure assets in Australia, Japan and South Korea. In 2020 Ontario Teachers and Abu Dhabi Investment Authority (ADIA) committed $1.25 billion of capital to fund development and construction equity.
Infrastructure and Power Sector Investments			

Investments	Location	Timeframe	Description
Saesa	Chile	2008 – Present	SAESA is a vertically integrated group of electricity generation, transmission, and distribution companies in Chile. SAESA owns and operates more than 37,280 miles (60,000 km) of power lines for 930,000 customers. Ontario Teachers' and the Alberta Investment Management Corporation ("AIMCo") each own 50% of the company.
Puget Sound Energy	Washington State	2021 – Present	Earlier in 2021, Ontario Teachers' acquired a 15.8% stake in Puget Sound Energy, the oldest and largest electric and natural gas utility in the state of Washington, serving approximately 1.2 million electric customers and 900,000 natural gas customers in the Puget Sound region.
Caruna	Finland	2021 - Present	In March 2021, Ontario Teachers' acquired a 40% interest in Caruna, Finland's largest electricity distribution company. Caruna distributes electricity and maintains, repairs and builds a weatherproof electricity network for its approximately 700,000 customers in South, Southwest and West Finland, as well as in the city of Joensuu, the sub-region of Koillismaa and Satakunta.
Global Container Terminals	New Jersey	2007 – Present	One of Ontario Teachers' infrastructure investments, Global Container Terminals (GCT), has a significant portion of its operations in New Jersey. Since 2007, Ontario Teachers' has had a substantial investment in GCT and driven significant results at the Bayonne Terminal: • Grew lifts approximately 80% since 2008 • Grew revenue approximately 110% from 2008 • Spent approximately $340 million in capex since 2008 There are 500 unionized workers at Bayonne – the International Longshoreman Association (ILA) – Local 1588, Local 1804-1 and Local 1. The terminal has been recognized for its strong environmental record, with its appointment system reducing carbon emissions and air pollution as well as its Greenville rail yard project, the first such project awarded by the Port Authority of New York and New Jersey.

1.2.2 Ferreira

Ferreira[10] completes the Anbaric and Ontario Teachers' development/investment team. Founded in 1988, Ferreira, a privately held company led by Nelson Ferreira, is among one of the most successful civil, power and utility contractors in New Jersey, now with operations from Maine to

[10] www.ferreiraconstruction.com

Florida and in California. Ferreira and its affiliates had revenues over $600 million in 2020, bonding authority over $500 million, and more than 1,200 employees nationally. Ferreira is a qualified power/utility/civil contractor certified as a Minority Business Enterprise (MBE) and is among the largest minority-owned businesses in New Jersey.

Ferreira has been steadily increasing its position in the construction market sector and has been listed as one of the Top 400 Contractors in Engineering News-Record (ENR) industry rankings, moving up from 233 in 2016 to 173 in 2020; Ferreira ranked #1 in Power in ENR's Regional New York/New Jersey rankings in 2021. Ferreira brings its record as a civil, power, and utility contractor, training programs, and its close relationship with New Jersey's organized labor unions to the projects included in the Boardwalk Power Portfolio Anbaric is submitting to the SAA Solicitation.

More specifically, in New Jersey, as a premier construction organization and industry leader in seamless, safe, and economical project delivery, Ferreira has been awarded numerous projects focused on civil construction and utility construction. Ferreira is currently working on many utility projects for National Grid, Exelon (ACE/PECO/PEPCO), FP&L, PP&L, Eversource, Liberty Utilities, Con Edison, and PSEG in excess of $250 million. Some of its more notable projects include but are not limited to those detailed in Table 1-3.

Table 1-3 Ferreira Projects

Project	Location	Cost	Description
PSEG Roseland-Pleasant Valley Overhead Civil	New Jersey	$200 million	Project consists of demolishing over 30 miles of the existing 230kV overhead transmission facilities and installing monopole foundations for over 50 miles of existing 138kV transmission line.
CPV Woodbridge Energy Center Project (CPV)	New Jersey	$68 million	A design-build/EPC contract with Competitive Power Ventures - this project consisted of installing 1.7 miles of underground cable, 21 transmission towers with deep foundations and three tunnels. We value engineered the foundation portion of the work using pile supported caps instead of caissons to mitigate any disturbance to the contaminated soil. Additionally, since the project was in marsh / swamp land, we created a floating access road to give our crews access to the more challenging areas. All this work was done in and around unexploded ordinance since the area used to be an old arsenal site.
PSEG Metuchen-Trenton-Burlington Project Access Roads & Foundations (MTB)	New Jersey	$150 million	This project will upgrade the existing 138kV transmission circuits and equipment between Metuchen and Burlington to operate at 230kV. The 50 miles of existing underbuilt distribution and sub-transmission lines will be rebuilt and re-attached to the new structures as necessary.

Both the CPV and MTB projects received the New Jersey Leading Infrastructure award by the New Jersey Alliance for Action.

In addition to this work, Ferreira's affiliates are involved in numerous projects throughout New Jersey reflecting the Ferreira Family of Companies diverse portfolio. Ferreira's affiliate Valiant Power Group is a certified MBE electrical contractor based in New Jersey. Valiant, is a full-service commercial and industrial electrical contractor. Valiant has been working in New Jersey since 2013 and has amassed an extensive project portfolio, especially substation construction. It provides a composite team of Journeymen Linemen, Wiremen and Technicians to build and maintain Conventional & GIS Substations from 4kV to 500kV. Valiant's team has safely and successfully performed construction and maintenance projects on both new and existing indoor, conventional and GIS Substations. Examples of their work includes but is not limited to:

Table 1-4 Ferreira Affiliate (Valiant) Projects

Project	Location	Description
PSEG Cox's Corner 230K-kV Shunt Reactor	Evesham Township, New Jersey	The dry-type Reactor was the first installation of its kind for PSEG. Along with the reactor, VPG built a new bus section and breaker to complete the full installation of a new 230kV bay. On the controls side, VPG integrated the new control racks into the existing relay system plus performed the pulling and termination of all cables to the new equipment. Also included in this scope was the extensive addition and modification to the ground grid, as well as the installation of three dual tap CTs and one neutral CT, two lightning masts, and two overhead static wires. This project required detailed planning as the schedule was segmented between outage and non-outage activities. Field supervision worked with project management to develop and maintain critical path tasks with the customer as well as integrate the civil construction activities.
PSEG Branchburg 500kV Transformer	Readington Township, New Jersey	Following the major failure of a 500kV transformer, Valiant was tasked to install a new SMIT 500kV Transformer at Branchburg 500kV Substation. The site was energized for the duration of the project with 500/230/13kV. VPG coordinated delivery of all equipment, as well as assembled, wired, and terminated the 500kV to 230kV transformer. Our controls crew was responsible for all power, control, fiber, and tertiary cables in the 500kV yard, 230kV yard and the Control house. Throughout the installation VPG complied with the NERC CIP status of the Branchburg 500kV yard, ensuring the security and reliability of the electric grid. This NERC-CIP designated 500kV yard is critical for the electrical infrastructure in the Northeast. Valiant was responsible for the replacement of 500-3 C Phase transformer and coordinated with SMIT representatives to bring Phase A and B up to specification for the installation of the transformer monitoring system.
Princeton University Campus Electrical Infrastructure Upgrade project	Princeton, New Jersey	The Elm Drive Substation was fed electricity from two PSE&G substations - one at Elm Drive and one at Charlton Street. Combined, these two had a capacity of 30MW. While this is sufficient capacity at the time, any significant new building construction would require a new substation to maintain an adequate supply. Princeton identified the need for a new 75MW substation to alleviate the capacity limit on PSE&G's existing supply to campus. The University decided to construct a new substation in West Windsor where PSE&G has sufficient capacity and power the campus from it. Valiant was responsible for the substation construction of this project which was completed in 2020.

Ferreira Construction affiliate companies are also active investors. Since 2011, these Ferreira affiliates have completed multiple transactions involving solar generation in New Jersey. Most notable, was the development of the Somerset County Improvement Authority Solar Power Purchase Agreement (PPA). The project involved developing a portfolio of 33 photovoltaic systems, installed at various Somerset County owned assets. The total project installed capacity is 8.03 MW DC. The project was initially developed in partnership with Citi Bank, and ownership has now completely transferred to the Ferreira affiliate. The PPA is due to expire in 2026.

2 Project Proposal Identification

Proposing Entity Name: Anbaric Developer Partners, LLC

Company ID: Option 2.2

Project Title: Boardwalk Power Option 2.2

PJM Proposal ID: 2021-NJOSW-831

3 Portfolio and Project Summary

3.1 Boardwalk Power Portfolio

Anbaric is pleased to present a portfolio of 19 project proposals, cumulatively referred to as the "Boardwalk Power Portfolio". The Boardwalk Power Portfolio forms a comprehensive, flexible, and scalable offshore wind transmission solution. The goal of the Boardwalk Power Portfolio is to assist New Jersey in achieving its target of delivering 7,500 MW of offshore wind energy by the year 2033.

The recent New Jersey solicitation has been the spark to bring the offshore transmission grid backbone to life. Anbaric has been an industry leading voice advocating a "transmission-first" approach to developing offshore wind projects and creating an offshore grid to meet the transmission needs of the industry. The SAA solicitation provides the perfect opportunity to bring the benefits of Anbaric's offshore transmission grid vision to reality.

3.1.1 Summary

The Portfolio contains project proposals for the possible transmission links necessary for reliable, efficient, and cost-effective interconnection of the offshore wind farms to be competitively selected in the coming New Jersey offshore wind solicitations and joining those wind farms to POIs in New Jersey. Subsets of these 19 project proposals form complete offshore transmission systems addressing the needs of different future New Jersey offshore wind solicitation results, all adding up to 7,500 MW or more.

Each project proposal has been prepared in accordance with the guidelines outlined in the New Jersey Board of Public Utilities (NJBPU) and PJM Interconnection (PJM) offshore transmission solicitation[11]. As represented in Figure 3-1, Anbaric is submitting twelve (12) Projects under "Option 2" (yellow components below) and seven (7) Projects under "Option 3" (blue components below) for NJBPU/PJM consideration.

[11] 2021 NJ Offshore Wind SAA Transmission Proposal Window Overview – Dated 15 April 2021.

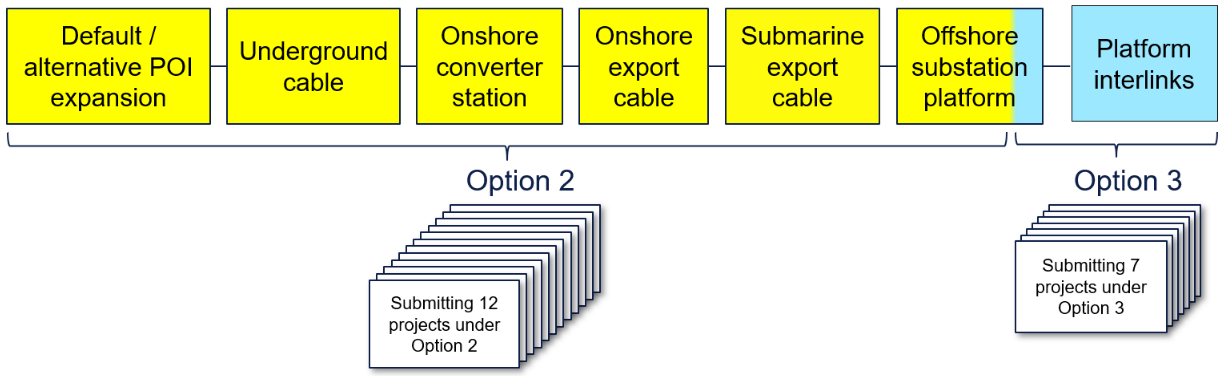

Figure 3-1 Offshore Transmission Solution Scope Elements

The NJPBU/PJM Problem Statement for Option 2[12] requests the development of point-to-point transmission links between onshore substations and offshore wind farms (OWF). The goal of Option 2 projects is to export the energy generated from OWFs in the most cost-effective way and to enable future offshore grid connections to be made. Anbaric does not foresee the need for new onshore substations, and hence all Option 2 project proposals will tie-in to existing substations. The twelve (12) Option 2 project proposals are differentiated by a few factors, as detailed further in Table 3-1:

1. Location of the offshore substation platform (OSP) (i.e., the OWF which is injecting energy into the grid)
2. Location of the Point of Interconnection (POI)
3. Transmission link type (submarine/underground), capacity, and voltage.

The NJPBU/PJM Problem Statement for Option 3[13] requests the development of transmission interlinks between two or more OSPs. The goal of Option 3 projects is to improve the availability of the offshore transmission system, to provide redundant auxiliary power, and to enable backbone functionality between two separate onshore POIs. The Boardwalk Power Option 3 Projects consist of submarine cable circuits and the associated interfacing equipment. The seven Option 3 project proposals are distinguished by the different OSPs that they connect.

The 19 projects, as presented in Table 3-1, Figure 3-2, and Figure 3-3 submitted for NJBPU/PJM consideration as part of the Boardwalk Power Portfolio include six (6) OSPs, with a capacity per OSP ranging between 1148 MW to 1510 MW, and are named after the closest OWF lease area:

1. Hudson South Lease Area A (HS1)
2. Hudson South Lease Area E (HS2)
3. Atlantic Shores 1 (AS1)
4. Atlantic Shores 2 (AS2)
5. Atlantic Shores 3 (AS3)
6. Ocean Wind 2 (OW2)

[12] Option 2 Problem Statement For 2021 SAA Window to Support NJ OSW v.4.11.21
[13] Option 3 Problem Statement For 2021 SAA Window to Support NJ OSWv.4.11.21

From these six OSPs, Anbaric is presenting various submarine/underground transmission link routes that will connect to one of three POIs. [redacted] Lastly, three onshore HVDC converter stations are proposed to be built within a short distance of these three POIs.

In addition to providing a full set of transmission solutions for future offshore wind solicitations, Anbaric has included projects within the Boardwalk Power Portfolio to connect the recently awarded Atlantic Shores 1 and Ocean Wind 2 offshore wind farms. These additional Boardwalk Power Portfolio projects provide constructable, competitive, and low risk solutions to transport the power generated by these wind farms to a POI, maximizing the benefit for New Jersey ratepayers.

Table 3-1 Summary Description of Project Submittals

[redacted]

[redacted]

Figure 3-2 Single Line Overview of Boardwalk Power Portfolio

[redacted]

Figure 3-3 Boardwalk Power Portfolio Map

3.1.2 Design Standard

The projects in the Boardwalk Power Portfolio are based on a common technical design which can be repeated for subsequent offshore transmission links. This design standard:

- Reduces costs
- Minimizes risks
- Improves performance by enabling compatibility between different projects

The key technical design parameters of the projects have been standardized to achieve cost savings resulting from modularity and compatibility with other offshore links to enable the development of an offshore grid, as further described in Section 3.1.3.

The design standard approach allows Anbaric to build on lessons learned and minimize uncertainties and risk. The award of multiple projects, based on a design standard approach within the Boardwalk Power Portfolio, enables the optimization of fabrication leading to efficiency gains during project management and in operation, resulting in substantial cost savings for the State of New Jersey ratepayers. Moreover, by combining onshore transmission corridors and onshore converter station sites, the impact to the environment is minimized, the cost of surveying and permitting is reduced, and the overall cost of construction is decreased. Offshore, the submarine export and interlink cable circuits will be installed within the same shared cable corridors, to the extent possible, with the goal of minimizing impacts on the environment, local communities, shipping, and permitting constraints.

This modular, flexible, and future-ready transmission system is a key tool to unlock the benefits of an interconnected offshore grid for the State of New Jersey ratepayers.

The modularity of the design standard is achieved by identifying a high-level design envelope such as OSP dimensions and general arrangement, while maintaining enough flexibility to vary certain design parameters for project specific needs. The design standard can be modularly replicated to connect different OWFs with different onshore POIs by adjusting parameters such as POI voltage, export cable length, and water depth at the offshore converter station site, thus saving development and engineering costs. The design envelope is chosen to ensure alignment between the capacity of each proposed project, that of the offshore wind farm lease areas, and of the offshore wind solicitation capacities.

3.1.3 Technology

The Boardwalk Power Portfolio utilizes state-of-the-art high-voltage direct-current (HVDC) technology to ensure cost-effective, reliable, and efficient long-distance transmission of power with the lowest possible impact on the environment, fisheries, and local communities.

Anbaric advocates the use of one common voltage level to ensure basic compatibility between different offshore HVDC links and enable the interconnection into a multi-terminal offshore transmission system. Anbaric has chosen a transmission voltage of ±400 kV DC to ensure sufficient transmission capacity to meet the needs of any of the identified Wind Energy Areas (WEAs) and lease areas off the coast of New Jersey while respecting the maximum loss of infeed. The choice of transmission voltage is sufficiently high to enable transmission capacities for current and future export of New Jersey offshore wind procurements with single circuits, thereby minimizing the required number of offshore cable circuits. The voltage level is sufficiently low to avoid unnecessary investment in overcapacity or the risk of stranded assets. Transmission capacities ranging between 1,148 MW and 1,510 MW can be accommodated using the same OSP design and general arrangement.

Modular multi-level voltage source converter (MMC-VSC) technology will be used both onshore and offshore to enable the connection of AC offshore wind turbine generators, minimize the footprint and visual impact of the onshore converter station, and achieve high transmission efficiencies. This type of converter technology has excellent control capabilities, making it the most suitable choice for multi-terminal HVDC transmission systems.

The onshore and offshore converters will be configured as a symmetrical monopole. This converter configuration is widely used and enables the use of standard AC equipment while minimizing the impact of DC faults on the AC grid. To avoid the need for additional costly AC collector platforms, the offshore wind farm 66 kV AC array cables will be directly connected to the offshore converter platform.

Technical aspects associated with production, construction, transportation and installation, commissioning, and operation and maintenance of this Project are discussed within the Option 2.2 Technical Bid document.

3.1.4 Multi-Terminal Readiness

Anbaric sees the current New Jersey offshore transmission solicitation as a steppingstone towards realizing the vision of a future coordinated interconnected offshore HVDC grid. Future additions to the HVDC links built in the current solicitation can realize high power backbone capacity to enable the exchange of power between New Jersey and POIs in more remote and diverse energy markets in different states, different RTO/ISO zones, and even different countries.

The adoption of a design standard fosters the stepwise evolution into an interconnected offshore grid. It ensures common technology and system ratings and thus enables expandability and compatibility between adjacent projects. This enables different Option 2 HVDC export links to be connected offshore by means of an Option 3 offshore HVDC interlink. In the SAA solicitation, this type of interlink unlocks three concrete benefits:

- [redacted]
- [redacted]

[redacted]

[redacted]

[redacted]

A more detailed explanation of different forms of HVDC system fault clearing is given in Attachment 1 Analysis Report. It is recognized that the technical maturity of HVDC circuit breakers as a component has been proven at full-scale in projects such as PROMOTioN[14].

Building on the latest available experiences and knowledge in the field of HVDC circuit breakers, the projects will be designed to be compatible with the future addition of interlinks with HVDC circuit breakers to realize the third benefit. This connection would effectively create an offshore HVDC backbone grid. This type of benefit will materialize in offshore grid expansions beyond the current offshore transmission solicitation. HVDC circuit breakers are believed to play a pivotal role in the realization of such regional grids, and the proposed projects are designed to be compatible and futureproof.

3.2 Boardwalk Power Option 2.2

Anbaric is pleased to propose the Boardwalk Power Option 2.2 (referred to as the "Project"): [redacted] This Proposal is

[14] https://www.promotion-offshore.net/

the second of the 12 proposals which Anbaric has prepared in response to the problem statement for “Option 2". Figure 3-4 presents the Boardwalk Power Option 2.2 route map.

[redacted]

Figure 3-4 Overview of Boardwalk Power Option 2.2

3.2.1 Primary Technical Features

[redacted]

[redacted]

Figure 3-5 Technical Overview of Boardwalk Power Option 2.2

[redacted] Table 3-2 presents an overview of the Project component specifications.

Table 3-2 Boardwalk Power Option 2.2 Component Inputs

[redacted]

3.2.2 Timeframe for Development

The Project duration is highly dependent on time of award, anticipated commercial operation date (COD) of the OWF to be connected, and vendor selection. A generic and conservative schedule is provided in Section 8.0 but is subject to adjustment during final design. The COD is determined by the New Jersey offshore wind solicitation schedule and the available offshore WEAs and lease areas.

3.2.3 Role in Cost-Effective Development of 7,500 MW of Offshore Wind

The Project provides a cost-effective solution to reach New Jersey's goal of 7,500 MW by 2033 based on proven technology to connect an [redacted] Furthermore, the Project provides the ability to expand the offshore infrastructure to connect to the export links of other OWFs, thereby creating an offshore transmission grid, to improve performance and enable backbone transmission functionality. The permitting effort and basic engineering for the Project's underground cable route has been completed, and Anbaric has obtained site control over the land required for the onshore converter station and along the shoreline, where the transition from underwater to underground burial occurs, which means that the Project is a low risk and constructable option.

3.2.4 Project Optionality, Flexibility, and Modularity

Anbaric's Boardwalk Power Portfolio is aimed at providing PJM and the NJBPU with all the necessary options and flexibility to realize offshore transmission systems to accommodate the planned and future increases of offshore wind generation. The modular design based on a design standard can be cost-effectively replicated for projects with a range of capacities matching the New

Jersey offshore wind solicitations and WEA capacities. As a result, the transmission investment schedule can be matched with the offshore wind procurements, minimizing investment in under- or overcapacity and reducing the risk of stranded assets.

3.2.4.1 Combinations of Solutions

The Anbaric Boardwalk Power Portfolio consists of stand-alone projects which can be combined to form an interconnected offshore transmission grid to cost-effectively and reliably address the transmission need created by the offshore wind deployment off the coast of New Jersey.

The “Option 2” and “Option 3” Anbaric projects have been designed to be combined, with already awarded transmission solutions by OWF developers as well as with other Anbaric projects, to realize the transmission capacity needed to meet the 7.5 GW offshore wind target by 2033.

For the purpose of the PJM SAA transmission solicitation, there are four categories of OWF export links which are summarized in Table 3-3. These categories can be differentiated based on:

- Whether OWFs have already been awarded in the New Jersey offshore wind solicitation or not
- Whether the OWFs will build their own export link or connect to the SAA grid.
-

Table 3-3 Types of OWF Export Link Projects in SAA Offshore Transmission Solicitation

	OWF project was awarded PPA in previous New Jersey offshore wind solicitation	OWF project to be awarded PPA in future New Jersey offshore wind solicitation
Included within Anbaric Boardwalk Portfolio	OWF already awarded and connects to Anbaric proposal for SAA grid	OWF awarded in future solicitation and will connect to Anbaric proposal for SAA grid
Not included within Boardwalk Power Portfolio	OWF already awarded and builds own transmission link	OWF awarded in future solicitation and builds own transmission link, or connect to SAA grid by non-Anbaric proposal

The 7.5 GW offshore target includes the OWF projects Ocean Wind 1, Ocean Wind 2, and Atlantic Shores 1 which were awarded in the 1st and 2nd New Jersey offshore wind solicitations. The Ocean Wind 1 project will build its own offshore transmission link. Anbaric has therefore not included any projects relating to Ocean Wind 1 in the Boardwalk Power Portfolio. The Ocean Wind 2 and Atlantic Shores 1 projects may connect with their own offshore transmission links or connect to the SAA offshore transmission grid. For this reason, Anbaric has included proposals to connect these OWFs in accordance with the proposed Design Standard. Finally, some OWF projects may be awarded in future offshore wind solicitations but build their own offshore transmission link or be connected to the SAA offshore transmission grid by means of a non-Anbaric proposal.

The “Option 2” projects can technically be implemented in any order. In reality, the sequence and timing of the realization of “Option 2” projects are likely to be coupled to the outcomes of the New

Jersey offshore wind solicitations. The “Option 3” projects can be realized once the associated “Option 2” projects have been completed.

To illustrate, how the Boardwalk Power Portfolio projects may be combined in a range of different outcomes of the New Jersey offshore wind solicitations and the SAA offshore transmission solicitation, Anbaric has prepared a number of plausible offshore transmission network build-out and/or expansion “Pathways”. Pathways are a grouping of Anbaric and non-Anbaric projects meant to illustrate a complete 7,500 MW offshore transmission grid. Anbaric has hypothesized seven (7) Pathways that achieve this goal; however, only one (1) Pathway is presented here as Option 2.2 is included in Pathway 1. Refer to Attachment 1 Analysis Report for a full description of Pathway 1 through Pathway 7.

The Pathway 1, presented in Table 3-4 and Figure 3-6, use the same color coding to indicate which offshore transmission links in the Pathway are included in the Boardwalk Power Portfolio, and which ones are not. In Figure 3-6 the transmission links which are included in the Boardwalk Power Portfolio are shown as dark blue lines, and the ones which are not as grey.

In the following Pathways, it is assumed that OWF projects located close to the shore have a higher likelihood of being competitively selected, even if the ‘transmission-first’ approach is chosen. This is due to increased offshore logistic costs and possibly deeper water depths associated with OWFs further from shore. Anbaric used this offshore wind deployment sequence in combination with the latest New Jersey offshore wind solicitation schedule to determine illustrative CODs.

The Pathways show complete end-states of the envisaged offshore transmission grid by 2033 upon completion of the 7.5 GW capacity target, for different offshore wind deployment scenarios.

For each Pathway, a number of design alternatives exist to accommodate for different OWF capacities, different transmission link routes or the exclusion of “Option 3” projects. These alternatives are detailed within Attachment 1 Analysis Report.

BOARDWALK POWER LINK

Table 3-4 Projects Included within Development Pathway 1

[redacted]

[redacted]

Figure 3-6 – Illustration of Development Pathway 1

The need for different Pathways arises owing to the imperative to meet the results of different offshore wind generation procurements, the differing POI locations, the capacity to be transmitted, and the offshore wind farm location. As a result, different pathways result in:

- Different total transmission capacities – as documented in Table 3-4.
- Different onshore power injection distributions and sequences – as documented in Table 3-4.
- Different achievable benefits – as documented in Section 4
- Different environmental impacts – as documented in Section 7.0
- Different permitting requirements – as documented in Section 7.5
- Different total transmission costs – as documented in Section 5
  - Different transmission projects
  - Different achievable multi-project cost-savings
- Different transmission investment ramp-ups/schedules – as documented in Section 5
- Different risk profiles – as documented in Section 6

Ultimately, different outcomes of offshore wind solicitations and the associated alternative transmission pathways result in different benefits for the New Jersey ratepayer. At the same time, it is desirable to provide a level competitive playing field for OWFs regardless of their location and COD. To achieve both competitive offshore wind auctions, while ensuring an optimal transmission Pathway for the NJ rate payer, the BPU must first decide whether to include the results of the second offshore wind procurement in the transmission system that it selects. Anbaric has presented Pathways that enable the BPU to make this decision. In the event that the BPU decides to allow those projects to rely on their own generator lead lines to connect to the grid, Anbaric has presented Pathways to make this decision and maximize the benefits of a transmission system for the remaining available lease areas to reach the 7,500 MW goal and take the first steps to building a true offshore grid and secure the resulting benefits. New Jersey is in the enviable position of having wind energy areas off its coast with a potential wind generation capacity well above the State's current 7,500 MW goal – and those areas are located in close proximity to one another. This represents a unique and important opportunity for the State to consider what goals its next transmission procurement should embrace, i.e., what is the appropriate MW size for that procurement, what offshore grid features should be defined, what characteristics of that true offshore grid should include, and how that grid fits into its procurement plans for offshore wind, fortifying the on-shore grid, and transitioning to a low-carbon economy. Anbaric looks forward to responding to that procurement.

3.2.4.2 Future Increases in Offshore Wind Generation Above Current Plans

Future New Jersey offshore wind procurement above the current target of 7.5 GW will be realized in the WEAs in the Hudson South Call Area, and the Garden State lease area. Anbaric's analysis has shown that the projected OWF projects in these areas have capacities between 1.3 – 1.5 GW. The design standard proposed by Anbaric based on the ±400 kV VSC-HVDC symmetrical monopole and the proposed offshore transmission link routes ideally fit the projected capacities and locations of the remaining offshore WEA Hudson South B, C, D and F. As such, Anbaric's standard design is scalable and readily applicable to other offshore wind solicitations beyond New Jersey's 7.5 GW target by adjusting the project specific parameters (e.g., OSP location and cable length).

3.2.5 Interdependency of Options

The Boardwalk Power Option 2.2 anticipates the completion of necessary onshore grid upgrades to meet system reliability needs, addressing the needs outlined in the problem statement for "Option 1a" and thereby ensuring sufficient hosting capacity at the [redacted] at the time of completion. Projects addressing "Option 1a" needs will consider the separate infeeds from the other OWF projects awarded in the New Jersey offshore wind solicitations into the PJM transmission grid. Boardwalk Power Project Option 2.2 can be combined with any Option 1a projects proposed by other entities which are designed for the same power injection scenarios at the specific set of onshore POIs. Anbaric is not proposing any "Option 1.a" projects, but has identified several onshore grid reliability upgrades which will be necessary to accommodate the power injections associated with the above-mentioned Pathways. Details on the analysis and the identified violations are given in Attachment 1 Analysis Report.

The Boardwalk Power Option 2 projects can be implemented independently or in combination with other Option 2 and Option 3 project proposals by Anbaric or other entities, provided a suitable Option 1a project has been completed. An example of how the Boardwalk Power Option 2.2 Project can be utilized to address the New Jersey offshore wind solicitations within one (1) development Pathway is listed in Section 3.2.4.

Depending on the combination of the awarded Boardwalk Power Portfolio projects and associated build-out schedule, cost reductions of up to [redacted] for identified Pathways (e.g., three transmission links [from Option 2] and three platform interlinks [from option 3]) can be achieved. Alternatively, cost-savings of up to [redacted] (as compared to the sum of the individual costs of the projects) can be achieved if Anbaric is awarded two of the following projects together: Option 2.1, Option 2.2, Option 2.3, Option 2.8, and Option 2.10. An explanation of synergies factoring into multi-project selection and associated cost-savings is detailed in Section 5.1.1.

By combining two or more Boardwalk Power Option 2 projects with one or more compatible Boardwalk Power project for Option 3, redundant capacity can be realized, and the availability of the resulting offshore transmission grid can be substantially improved. This addition can see a reduction in the annual expected energy not transmitted (EENT) [redacted] Refer to Attachment 1 Analysis Report for further information regarding these calculations. Viable combinations of different Boardwalk Power Option 2 and Option 3 project proposals are listed in Table 3-5.

BOARDWALK POWER LINK

Table 3-5 Interdependence Between Option 2 and Option 3 Project Proposals

[redacted]

[redacted]

3.2.6 Overview of Project Benefits

Boardwalk Power Option 2.2 advances New Jersey's goals to achieve 7,500+ MW of offshore wind integration by [redacted] This results in offsetting SO_2, NO_x and Carbon emissions due to fossil fuel units. The estimated reduction in the emissions due to the project is as follows:

- SO_2 emissions reduction estimated at 1,308 tons/year,
- NO_x emissions reduction estimated at 1,096 tons/year, and
- CO_2 emissions reduction estimated at 2.41 million tons/year

The Project was studied as a part of offshore wind integration Pathway 1 that integrates 8,000+ MW of offshore wind onto the PJM grid. A discussion of the energy market benefits, capacity market benefits, and public policy benefits provided within each Pathway is provided in Attachment 1 Analysis Report.

[redacted]

The benefits of combining multiple Boardwalk Power Option 2 projects with Option 3 project(s) are studied as a part of multiple development pathways outlined in Attachment 1 Analysis Report. Combining Option 2 and Option 3 project proposals provides NJ gross load payment reduction benefits, benefits of reduced unavailability (i.e., reduction in the Expected Energy Not Transmitted) during the periods of outage of the transmission link connecting the OWF to the onshore POI, reduction in the costs of spare auxiliary equipment required during the time of transmission outage and congestion benefits. On a net present value basis, this amounts to a total savings of approximately [redacted] in the pathways comprising of Boardwalk Power Option 2.2.

3.2.7 Overview of Major Risks and Strategies to Limit Risks

Uncertainties or risks that may cause delays in Project benefits, Project timeline, or increases to Project budget, include but are not limited to the list below. Strategies to limit the risks and their impacts to New Jersey customers are also included:

- **Bureau of Ocean Energy Management (BOEM) ROW/ROW:** Anbaric filed an application for portions of the route very early in the process (2018) and is continuing to negotiate with and maintain good communications with BOEM.
- **Stakeholder Engagement:** Anbaric has developed an effective stakeholder engagement plan aimed at fostering support for the economic, environmental, and social benefits of the Project.
- **Construction Delays:** Anbaric is mitigating these risks by employing proper techniques for each risk situation, for example:
    - Anbaric has conducted a preliminary GIS-based desktop study to ensure the cable route avoids obstructions, difficult seabed soil types, and follows suitable bathymetry. The study also involved aligning with other offshore space users such as navigational channels, fisheries, and sand borrow areas.
    - Anbaric conducted a benthic community assessment survey along the offshore cable route that found no rare species.
    - Anbaric will utilize Horizontal directional drilling (HDD) to prevent collapse prior to insertion of plastic conduit and will implement visual monitoring programs to ensure no breakout of drilling fluids through the seabed or in wetlands.
    - Anbaric has conducted geophysical and geotechnical studies for portions of the Project offshore transmission route to inform the cable layout design, including identifying areas of potential sediment transport (i.e., sandwaves or megaripples) to avoid.
    - Anbaric conducted a thorough underground utility survey for the onshore cable route of Option 2.2 to avoid or mitigate interference with existing underground utilities.
- **Construction Delays Due to Federal and State Regulations and Restrictions**: Anbaric incorporates margins in the schedule to account for time of year restrictions on beach access to avoid federally-listed breeding shorebirds as well as recreational beach

activities, and to account for restrictions on vessel speed to reduce collision risk to the federally-endangered North Atlantic right whale.

- **Project Interruptions Due to Planned Construction-Related Outages on Existing PJM Transmission Facilities:** Anbaric has incorporated margins into the Project schedule and, upon selection, will enter into Interconnection Service Agreements (ISAs) and Interconnection Service Construction Agreements (ISCAs) with PJM and the respective Transmission Operators (TOs) to address schedules and contractual agreements for the interconnection process.
- **Supply Chain**: Anbaric has been working closely with tier 1 HVDC original equipment manufacturers (OEMs) and cable OEMs, assessing technology readiness levels (TRLs) of their products, and allowing adequate time in the schedule for contracting supply of main components.

Uncertainties or risks that may reduce or delay the anticipated benefits to New Jersey customers as well as mitigation measures developed to offset the potential risks include but are not limited to:

- **Emissions Estimate (SO_2, NO_x, Carbon)**: Anbaric employs careful modeling to assess the amount of renewable energy expected along with the corresponding emissions reductions in order to develop accurate estimates.
- **Schedule delays could postpone the benefit to NJ customers of reduced emissions (SO_2, NO_x, Carbon) due to the project**: As listed above, Anbaric employs multiple strategies including careful planning as well as adding margins to the schedule to account for unforeseen interruptions, in order to avoid schedule delays.
- **Incomplete Implementation of a Wind Integration Pathway may Reduce Anticipated Energy Market, Capacity Market, and Public Policy Benefits:** Anbaric has developed multiple Pathways to integrate 7,500+ MW of offshore wind onto the PJM grid, providing tremendous flexibility to maximize specified benefits to NJ customers.

Project-on-project risks that may exist between this project and other transmission or offshore wind projects, as well as potential opportunities presented, include but are not limited to:

Project-on-Project: Anbaric defines project-on-project risk as the risk of decoupling transmission from offshore wind generation. By planning an offshore transmission grid for 7,500+ MW to which nearby projects can connect, Anbaric increases the likelihood of timely delivery of transmission that will be more cost-efficient for NJ ratepayers, and reduces overall environmental impact.

Additional information on risks associated with the Project and their accompanying mitigation measures can be found in Section 6, Project Risks and Mitigation Strategy.

3.2.8 Overview of Project Costs, Cost Containment Provisions, and Cost Recovery Proposals

3.2.8.1 Overview of Project Capital Expenditure

The Project cost for Boardwalk Power Option 2.2 (in current year, 2021) is estimated at $1,876,578,136 which covers the activities listed in Table 3-6.

Table 3-6 Summary of Project Capital Expenditures

Project Management	Design and Engineering	Procurement, manufacturing, and fabrication	Transport & installation	Construction and construction management
Commissioning and testing	Permitting / routing / siting	ROW / Land acquisition	Overhead & miscellaneous costs	Contingency

Further details of cost estimate assumptions and breakdown is provided in Section 5.

3.2.8.2 Overview of Cost Containment and Cost Recovery

Anbaric supports the BPU's objective of minimizing costs to ratepayers and aligning incentives between ratepayers and project sponsors. Anbaric has made this a priority in developing our proposal. Anbaric is demonstrating this commitment with a mix of cost containment measures and incentives: (a) a cap on construction costs; (b) a competitive and compelling ROE with a waiver of all available ROE adders; (c) a declining ROE for costs above our bid price; (d) an incentive to drive costs below our bid price through sharing cost savings between the ratepayers and the Designated Entity; (e) a cap on equity at 45% of the capital structure; and (f) a commitment to schedule guarantees. These measures are outlined further below and in section 6.10:

- **Phased and coordinated development.** Anbaric's Boardwalk Power Option 2.2 offers NJ ratepayers a more certain path to completion, and a greater certainty of project costs as most of the onshore permitting work has been completed and site control is secured. Refer to Section 6.1 for site control information and Section 7.5 for permitting plan information.
- **Cap on Construction Costs**. Anbaric, the Designated Entity, agrees that it will not seek recovery through its Annual Transmission Revenue Requirement of any Construction Costs in excess of an amount equal to the Construction Cost Cap Amount, which for Anbaric's Boardwalk Power Option 2.2 is 125% of Indexed Bid Construction Costs based on the amounts set forth in Section 5.1.
- **Competitive Return on Equity.** The Designated Entity commits to file with FERC for an 8.5% ROE, subject only to the two adjustments described immediately below plus any adjustment due to Schedule Delays, and agrees to waive all customary FERC transmission incentives. The ROE shall apply to the initial investment of the Construction Costs for the life of the project, and Anbaric agrees not to seek a higher ROE pursuant to its rights under Section 205 of the Federal Power Act.
  - **Reduction in ROE for Costs Above Project Bid Estimates.** For Construction Costs that exceed the Indexed Bid Construction Costs up to the Construction Cost Cap Amount, the Designated Entity shall recover a reduced ROE of 5.75%. For

Construction Costs that exceed the Construction Cost Cap Amount, the Designated Entity shall not recover any Construction Costs nor shall it earn any ROE on such amounts.

- **ROE Incentive to Actual Project Costs Less Than Project Bid.** If the actual Construction Costs are less than the Indexed Bid Construction Costs, the Designated Entity shall be entitled to a 50 basis point adder to the project ROE for each 10%, or portion thereof, that Construction Costs are below the Indexed Bid Construction Costs. For example, if Construction Costs are 5% below the Indexed Bid Construction Costs, the ROE will be adjusted from 8.5% to 8.75% (8.5% plus 0.50% x (5%/10%)).

- **Capped Equity Structure**. The Designated Entity commits to an actual equity content of no greater than 45%. The Designated Entity shall be granted relief from this commitment if the capital market conditions do not remain normal and the Designated Entity does not have the ability to finance the Project with the proposed capital structure.
- **Schedule Delays**: The Designated Entity commits to a reduction in the Project ROE if the Project does not achieve Commercial Operation by the Target Project In-Service Date, as such date may be extended for Extension Events. For each month of delay after 6 months, the Designated Entity will reduce the applied for ROE by 2.5 bp per month of delay. The reduction in ROE will apply for up to an 18-month delay resulting in a maximum reduction of up to 30bp in ROE.
- **Liquidated Damages**. Anbaric intends to negotiate damages payments with its construction contractors to compensate for delays in project delivery. In the event that the Project is delayed and Anbaric collects these payments it pledges to pass this value on to NJ ratepayers.

4 Project Benefits

4.1 Reliability Benefits

Reliability is a critical component of the operation and maintenance of the transmission system. Therefore, HVDC voltage source converter (HVDC-VSC) (modular multilevel with half-bridge submodule architecture) links have been proposed to interconnect the OWFs to the onshore transmission grid. Ongoing research has shown many benefits associated with this type of HVDC links. Such benefits include but are not limited to:

- **STATCOM capability:** Synchronous compensator (STATCOM) has superior performance in many aspects, including responding speed, stabilize voltage of power grid, reduce system power loss and harmonics, increase both transmission capacity and limit for transient voltage. The HVDC cable can be operated as a static STATCOM in multiple modes to provide these reliability benefits to the system.
- **Power system oscillation damping:** Oscillations in power systems can have adverse impact on the reliability of the system if it remains unchecked. Power system oscillation is a phenomenon that has been keenly investigated by power system engineers over the

years. When oscillations occur in the power system, the oscillation will need to be dampened as soon as possible to maintain the integrity of the system. The proposed HVDC technology has the capability to contribute to the damping of power system oscillation (requires OWF with suitable control functionality).

- **Act as filters to remove harmonics:** Harmonics (caused by sudden current absorption by nonlinear loads from the grid) has the potential to cause power system facilities/equipment to malfunction thereby causing undesirable power system operations. Using an HVDC cable which has the functionality to act as filters to remove harmonics as part of the NJ Offshore Wind (OSW) transmission solution, can help reduce the presence of harmonics in the system.
- **DC fault ride-through (FRT):** During DC fault renewable generators that are connected to the grid via conventional HVDC technology will trip/disconnect from the network grid. This leads to sudden loss of active and reactive power that the renewable generator was providing to the system. The HVDC-VSC with DC FRT capability will continue operating and regulating the AC grid during the fault period. In other words, the generator remains connected to the grid.
- **Fault contribution:** Fault contribution can cause circuit breakers at substations to be overdutied. The HVDC-VSC technology is constructed in such a way that it does not contribute to the fault level at POI.
- **Black-start:** With voltage source converters, the HVDC-VSC can initiate the black-start process thereby allowing the connected OWF to be used as black-start generators (requires OWF with suitable control functionality).
- **Frequency regulation:** Large frequency deviation can cause the outage of generator units, and if left unchecked, can cause system blackout. The energy stored in the HVDC-VSC link can be used to provide frequency support (requires OWF with suitable control functionality).
- **Reduce loses:** Modular multilevel HVDC-VSC if capable of reducing losses compared to other types of converters. AC lines are not equipped with the technology to provide the aforementioned reliability benefits. Hence, HVDC-VSC will be utilized.

In addition to the benefits outlined above due to the capability and functionality of the HVDC-VSC technology, other benefits associated with the Boardwalk Power Option 2.2 solution include:

- **Extreme weather outages:** The HVDC links will be buried along its entire on shore length. This greatly reduces exposure to the impacts of severe weather conditions and thereby significantly reduces extreme weather outages and weather-related multiple unforced outages, compared to overhead transmission line.
- **Reduced probability of common mode outages:** Part of the design of the Boardwalk Power Option 2 solution is such that each of the HVDC links connecting the OWF to the specific POIs will have its own separate trench/ROW. This will help prevent the probability of common mode outages due to electrical or non-electrical causes.

- **Redundancy:** The offshore network will be equipped with switchable interlinks to provide an alternate route in the event of an outage on the main HVDC links. In the absence of a switchable interlink, OSW capacity associated with the affected site will be islanded under gen-tie outage conditions. Hence, the interlinks provide increased transmission availability to the OWFs.
- **Must-run generation:** The ability of the Boardwalk Power Option 2.2 solution to provide alternative outlets for the OWF coupled with the ability of the HVDC-VSC to reduce losses will help minimize the amount of power needed from inefficient, uneconomical must-run generators. In addition, the Boardwalk Power Option 2.2 solution provides and redundant supply of auxiliary power to OSPs and OWFs otherwise islanded by an export link outage, reducing the need to install and operate diesel generators offshore.
- **Special operating procedures:** The listed benefits/capabilities of the HVDC-VSC technology may reduce the need to implement certain special operating procedures that would have been needed to achieve the same benefits to the transmission system.
- **Power quality degradation:** All the reliability benefits listed above associated with the Boardwalk Power Option 2.2 solution, as well as the reliability benefits associated with the HVDD_VSC technology, can significantly improve the power quality of the grid, thereby increasing the reliability of the transmission system.

Submarine cable outages are the main source for unavailability of HVDC links. The Project will include all measures to reduce the downtime associated with HVDC cable failures to an absolute minimum. Table 4-1 details the measures Anbaric will take to reduce the probability of failures and streamline repair in the unlikely case they do occur.

Table 4-1 Measures to Reduce Likelihood of Cable Outages

Cable outage situations	Measure to Reduce the Likelihood of Failures
Failures due to internal reasons	Thorough QA/QC of the cable specification, design, qualification, production, transport, and installation will be implemented in accordance with applicable standards and industry best practice to ensure the highest possible quality cable and thereby reduce the probability of internal failures. Independent 3rd party technical specialists with a proven track-record in submarine HVDC cable systems will be included in the project team to guarantee the submarine cable and its integration into the system is a key focus.
	The operation of the cable will be monitored using integrated temperature measurement systems to ensure the cable conductor temperature does not exceed the maximum operating temperature to guarantee the cable's technical lifetime.
Failures due to external reasons	To reduce the probability of failures due to external causes such as installation equipment, anchor drags or fishing equipment, a robust cable burial risk assessment will be performed to assess a suitable cable burial depth on the basis of geophysical survey data, historic data of local vessel movement and anchor penetration characteristics. Only proven and qualified cable burial techniques will be applied.
	Since the cable will be buried along the entire cable route, it is naturally protected from the majority of climate events. The cable burial depth, especially at landfall, will be chosen to be sufficiently deep to ensure the cable will not become exposed during excessive seabed or coastal erosion as a result of extreme weather events.

Cable outage situations	Measure to Reduce the Likelihood of Failures
	Periodic inspections to assess the cable burial depth will be carried out to detect cable exposure.
Reducing the downtime	A submarine cable repair service contract & spare parts management will be implemented to guarantee the rapid availability of suitable cable repair vessel, qualified technicians, and qualified spare parts in case a failure has occurred.
	Design for fast repair – e.g., a spare HDD conduit will be included at the landfall site to enable a rapid repair in case of a cable failure inside the HDD.
Reducing the impact of a failure	The Project is equipped to be connected into a multi-terminal configuration which enables the rerouting of offshore wind power via a redundant link during a cable outage.
	MMC-VSC converter technology was chosen in part due to its ability to operate as a STATCOM and deliver voltage support during cable outages. Anbaric will assess the possibility and need for the converter to provide active hormonic filtering services.

The Project, when combined with an offshore interlink and another export link, is capable of being configured into a multi-terminal offshore backbone transmission grid which can be used to exchange power between the [redacted]. This functionality unlocks the benefits and ancillary services, as listed below:

- Relieve onshore congestion between these POIs and benefit from differences in LMPs at these POIs
- Improve network availability by providing an alternative offshore transmission path parallel to the onshore transmission grids between these POIs
- Provide black-start capability:
  - To one of the connected POIs in case it has become islanded due to an onshore grid outage
  - To any connected POIs in case the offshore WTGs are equipped with grid-forming capability

4.2 Public Policy Benefits

Boardwalk Power Option 2.2 connects the future OWF at WEA [redacted] offshore wind generation to the PJM grid. The public policy benefits from this Project include reduced transmission losses, savings to the New Jersey rate payer, decreased on shore congestion, reduced emissions of carbon and pollutants, increased competition among offshore wind generators, and the benefits that flow from developing an offshore grid.

First, reduced transmission losses and savings to the New Jersey ratepayer. [redacted] is located closer to the load centers in New Jersey than the other SAA POIs. This location enables the energy from the offshore wind to be injected much closer to the load centers, thus lowering the energy losses incurred on the transmission system.

Congestion on the transmission grid within and outside New Jersey results in higher energy and capacity prices for the New Jersey ratepayers. The increased net delivered energy from the offshore wind also contributes towards the reduction in the onshore congestion experienced on the transmission constraints importing power into New Jersey and also on constraints within New Jersey.

[redacted]. This results in offsetting SO_2, NO_x and Carbon emissions due to the fossil fuel units. Average SO_2, NO_x and carbon emissions per MWh of energy output were obtained from PJM's 2020 emissions report (PJM, "2016 – 2020 CO_2, SO_2 and NO_X Emission Rates", April-2021). Based on average emissions rate, the estimated reduction in annual emissions due to the project are as follows:

- SO_2 emissions reduction – 1,308 tons/year (based on PJM average SO_2 emissions rate of $0.43 lb/MWh),
- NO_x emissions reduction estimated – 1,096 tons/year (based on PJM average NO_x emissions rate of 0.36 lb/MWh), and
- CO_2 emissions reduction estimated at 2.41 million tons/year (based on PJM average CO_2 emissions rate of 791 lb/MWh)

The reduction in air emissions made possible by integrating wind energy to the grid and by the state's plan to transition to zero-emission passenger, and medium- and heavy-duty vehicles is expected to provide direct and indirect health benefits, saving millions of dollars in health costs related to air pollution15. Importantly, the health benefits will apply more directly to overburdened communities and other New Jersey residents who are currently disproportionately burdened by air pollution.

In addition to the energy, capacity, and Renewable Energy Certificate (REC) values added by a transmission system, the Project creates substantial pro-competition benefits. Planned transmission also allows for greater competition among offshore wind generation developers. The buildout of planned transmission allows:

1. New entrants and early entrants into the U.S. offshore wind generation market to compete on an even playing field by reducing the locational advantages of wind energy areas close to the

[15] New Jersey Board of Public Utilities, 2019 New Jersey - Energy Master Plan - Pathway to 2020

coastline, by reducing first mover advantages in the offshore generation sector by eliminating the most complex component of offshore win generation development – the grid interconnection process via an open access, independent transmission system, and by stimulating competition among offshore wind generators on price and efficiency in their core business, generation of wind.

2. Offshore wind generation will compete on a more level playing field with other grid resources – e.g., natural gas combined cycle plants, which have benefited by the existing socialized onshore transmission system – on the basis of energy market economics because, like fossil resources, the generator will not need to supply its own transmission system.

For example, in the Netherlands16 and Germany in 20171718, the provision of a planned transmission system offshore generation bid without government subsidies. This model bodes well for the future needs of New Jersey, given that more than 7,500 MW of offshore wind generation will be needed to meet state goals, and much more to meet decarbonization goals. Precisely for these reasons, the U.K. is moving towards a coordinated offshore transmission planning approach19.

More specifically, new entrants will be able to compete against first movers on a levelized basis because a key variable, the selection of a point of interconnection, will be already made, and that variable requires the most experience with the U.S. market and its unique interconnection processes. Offshore wind generators will thus focus on selection of the wind energy lease area and maximizing its output. Additionally, with a transmission system already identified, the location of the wind energy itself as a cost variable will be reduced. The distance to shore and route to a robust POI will no longer be a significant variable and the generators will be able to compete on the generation profile of their projects. In short, locational advantages of wind energy areas will be reduced. In a New England study, The Brattle Group estimated that this transmission competition enabled by a planned transmission system would save 20% - 30%.20

Moreover, planned transmission increases competition between onshore fossil and offshore wind resources. Studies have shown that cost savings within solicitations that are possible, and real-world examples show the potential for consumer savings of subsidy-free procurement of offshore wind. Recent studies have shown over 50% less cabling21 with the use of planned transmission vs. radial lines, and the avoidance of billions in onshore upgrades. Recent experience in New England, i.e., the ISO-NE Cluster Study now underway examining injections into Cape Cod, has demonstrated

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[16] Two, 350 MW wind farms awarded to Vattenfall, COD by 2022. https://windeurope.org/newsroom/press-releases/worlds-first-offshore-wind-farm-without-subsidies-to-be-built-in-the-netherlands/

[17] OWP West at 240 MW, Borkum Riffgrung West 2 at 240 MW, and He Dreiht wind farm at 900 MW. https://www.nytimes.com/2017/04/14/business/energy-environment/offshore-wind-subsidy-dong-energy.html

[18] BASF and RWE have announced in 2021 that they are planning a 2 GW subsidy-free wind farm in the German part of the North Sea: https://www.offshorewind.biz/2021/05/21/basf-and-rwe-plan-to-build-2-gw-subsidy-free-wind-farm-offshore-germany/

[19] https://www.nationalgrideso.com/news/exploring-coordinated-approach-offshore-electricity

[20] https://newengland.anbaric.com/wp-content/uploads/2020/07/Brattle_Group_Offshore_Tranmission_in_New-England_5.13.20-FULL-REPORT.pdf.

[21] https://newengland.anbaric.com/wp-content/uploads/2020/07/Brattle_Group_Offshore_Tranmission_in_New-England_5.13.20-FULL-REPORT.pdf.
http://ny.anbaric.com/wp-content/uploads/2020/08/2020-08-05-New-York-Offshore-Transmission-Final-2.pdf

that where radial lines are used, the best, least expensive points of interconnection and the ideal routes in the ocean and along the coastline are selected by the earliest projects, resulting in underutilization of scarce assets and substantial congestion as generators seek to connect to the closest location because the incremental costs, but note the holistic costs, are the lowest. The queue process only has a limited ability to plan for subsequent interconnection requests until it's clear that a proposed project will in fact be built. ISO-NE has found that the area sought after for wind interconnections is "full" electrically and over a $1 billion in enabling upgrades are needed to move forward on the next offshore wind project 22. The result is significant upgrades that make the next wind project much more expensive than it could have been and creates the risk of communities opposing or rejecting additional projects due to prolonged construction. More threatening is the possibility of early projects simply securing all feasible routes or substations. New York tells a similar story. A maximum of four cable routes are available through the Narrows into Brooklyn, given the required cable separation distances. With HVDC technology, each of these could have transmitted between 1,600 to 2,000 MW or more[23]; but awards have been made for projects utilizing just 400 MW sized circuits. These awards underutilize cable routes at a bottleneck location, and therefore threaten the continued expansion of offshore wind.

This recognition of the need to move to a planned transmission system is seen in Europe. In the United Kingdom, where the country's extensive coastline represents the best-case for laissez faire development of radial transmission, the regulator, Ofgem has moved to a planned transmission network system. The grid operator, National Grid ESO, which functions like PJM in many of the grid operation functions, released a study in 202124 showing over 70% fewer assets would be needed from a planned system and resulted in greater reliability and a savings to consumers of over £ 6 billion ($8.3 billion). Importantly, and to the New York Narrow's example mentioned earlier, the National Grid ESO study also found that these savings and asset reduction (and therefore environmental, permitting, and environmental justice) benefits were reduced by 50% if a planned grid was delayed from 2025 to 2030. Every incremental radial project is a missed opportunity to optimize cable size, the onshore grid and do so with significant benefits. The data are clear that the future sought by New Jersey is one enabled in a far superior manner by planned transmission and those same data highlight that the benefits are most pronounced when planned transmission is adopted as soon as possible.

4.3 Market Efficiency Benefits

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

- [redacted]
- [redacted]

Table 4-2 NPV of Gross Load Payment Benefits and Levelized Costs by Pathway

[redacted]

4.4 Additional New Jersey Benefits

Transmission is arguably the most time consuming and difficult element of offshore wind development, often requiring five to eight or more years to finish due to siting, permitting, and necessary grid upgrades. Planning the transmission system up front ("transmission-first") significantly reduces the risk of the buildout of offshore wind later. The risk mitigation benefits of Anbaric's 1,400 MW project include:

- **Lower cost.** By holistically considering NJ's 2033 offshore wind goal of 7,500 MW and planning a transmission system with all upgrades necessary to deliver this power to the ratepayers, Anbaric's proposed Projects will be more cost-effective for NJ ratepayers than a piecemealed OSW solution.
- **Improved constructability.** Planned transmission and use of HVDC technology results in the need for far fewer cables coming ashore across New Jersey's barrier islands, leading to significantly less construction disruption to the wildlife, residences, and towns than AC alternatives would create. Offshore, this leads to less ocean trenching, and fewer connections, which minimizes construction and enables a holistic and flexible transmission network that simplifies transmission interconnection for all associated OSW projects.
- **Economic Impact**: Anbaric recognizes the tremendous economic impact potential that exists for the State through the growth and permanence of the Offshore Wind industry. While the transmission component of offshore wind carries with it different impact in

terms of job creation and manufacturing needs than the generation aspect of the industry, there is still significant potential for local investment, local presence, and the engagement of local labor. See Attachment 30 Anbaric Community Impact Strategy for more information.

As a small company, Anbaric has the flexibility to build a team of local talent for the projects Anbaric are involved with. Anbaric have a demonstrated track record of doing so through our Hudson and Neptune projects. Through our development work over the past 8 years in New Jersey, Anbaric have engaged local law firms, engineering firms, architects and other NJ based talent. If successful in our bids through the PJM SAA process, Anbaric will expand upon this through engagement with other New Jersey based companies, rather than importing from other states or abroad. In addition, Anbaric plans to open an Anbaric project headquarters in the state if successful.

Anbaric also recognize the need to give back to the community, as well as prepare New Jersey youth for the opportunities that will be presented by the clean energy economy. As such, Anbaric will pledge to invest $5 million over 4 years into numerous state, regional, and local STEM education and workforce development initiatives that will reach communities throughout the State and impact a tremendous number of New Jerseyans as detailed in the impact strategy prepared for Anbaric by CN Communications.

- **Job Creation:** [redacted]

  [redacted]

  [redacted]

[redacted]

- **Future friendly**. Inspired by the spirit of the current SAA transmission solicitation, Anbaric has designed a future friendly transmission solution that can flexibly and modularly meet the transmission needs above New Jerseys current offshore wind target and beyond New Jerseys state borders in the years to come. The solution has been designed to maximize transmission capacities at least possible cost, within the constraints of the New Jersey onshore grid. This enables higher than currently planned offshore wind farm capacities, and expansion to the 11 GW of offshore wind New Jersey needs[26], at the lowest cost and environmental impact. The offshore substations have been designed with future expansion in mind, enabling the substations to improve the offshore grid's performance and enhance its functionality, or act as steppingstones for future developments of offshore wind farms. Most importantly, Anbaric's solution strongly advocates standardization of the technical characteristics of offshore HVDC infrastructure, to ensure compatibility between different offshore transmission systems and simplify the connections of future offshore grid expansions.
- **Reduced environmental impact.** Comprehensive transmission system planning minimizes disturbance of an area by ensuring that installed infrastructure is sized at the outset to manage all phases of the eventual buildout. This mitigates the risk of returning to disturb an area repeatedly. Also, fewer marine cables translate to less trenching and less disturbance of the seabed.
- **More efficient permitting.** Approaching state and federal permitting authorities with a single, comprehensive construction schedule mitigates risks associated with multiple individual construction schedules and increases the likelihood of timely review. For

[26] Rocky Mountain Institute Report, New Jersey Integrated Energy Plan, 1 November 2019

Boardwalk Power Option 2.2, Anbaric has engaged with the communities along the cable routes, as well as with fishing interests and other maritime users, minimizing points of contention and easing the permitting process of a constructable route. To further mitigate siting and permitting risks, [redacted]

- **Project-on-project benefits.** Separating procurement of transmission from generation increases the likelihood of timely delivery of transmission. A 'transmission-first' approach facilitates transmission interconnection for all associated OSW projects.

The option value of an offshore wind transmission project or system consists of the value that is not realized at present, but can be obtained in the future, depending on changing circumstances. The option value of Anbaric's 1,400 MW Portfolio or offshore grid transmission system includes:

- **Standardized, modular design.** To enable any offshore platform and converter station of a particular voltage and manufacturer to connect to another project of the same voltage and manufacturer link with another project. Studies are underway to define how projects using different manufacturers will be able to connect in the future; as yet there is no such project in operation.27
- **Technical adaptability**. The projects Anbaric now proposes will be able to incorporate HVDC circuit breakers in the future to create a true offshore grid, that is an extension of the onshore grid to the offshore context, including, among other features, the virtually instantaneous and automatic re-routing of power in case of a contingency. Deployment of the HVDC circuit breaker technology will be examined when the technology has been tested, deemed ready for use in the offshore industry, and is commercially available.
- **Interlink Capability.** [redacted]
  - [redacted]
  - [redacted]
- **Suitable Project Sizing.** The 1,400 MW size of Anbaric's projects allows the complete capacity of existing and future offshore wind areas to be captured, reducing or eliminating underutilized capacity in wind energy areas.

[27] See O. DESPOUYS et al., Assessment of interoperability in multi-vendor VSC-HVDC systems: interim results of the BEST PATHS DEMO #2, B4-134 CIGRE 2018.

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5 Proposal Costs, Cost Containment Provisions, and Cost Recovery

5.1 Project Capital Expenditure

Anbaric secured cost estimations from original equipment manufacturers (OEMs), proprietary database costs from its consultants, and publicly available information to estimate the Project Capital Expenditure (CapEx). Additionally, the construction and civil work costs were adjusted based on the local market. The cost for the 1,400 MW, 400 kV HVDC solution connecting [redacted], based on the PJM competitive planner tool breakdown, is depicted in Table 5-1:

Table 5-1 Estimated Capital Expenditure Details for Option 2.2

Capital expenditure details for Option 2.2	Cost (USD) (2021)
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
[redacted]	[redacted]
Proposed total CapEx	**$1,876,578,136**

5.1.1 Multi-Project Cost-Savings

If more than one project is awarded, there will be cost-saving synergies that Anbaric can capitalize on. For example, vendors have confirmed with Anbaric that if more than one project is awarded, there will be a commercial discount on Engineering, Procurement, Construction (EPC) contracts ranging between [redacted] Considering potential synergies that lead to cost-savings, Anbaric estimates that if a full Pathway is awarded (e.g., at least 3 transmission links [Option 2's] and 3 platform interlinks [Option 3's]), the overall cost-savings for the award of a full Pathway is up to [redacted], as compared to the sum of the individual costs of the projects. Factors contributing the [redacted] cost savings include:

- [redacted]
  - [redacted]
  - [redacted]
  - [redacted]
  - [redacted]
  - [redacted]

- [redacted]
- [redacted]
- [redacted]
- [redacted]

[redacted]

- [redacted]
- [redacted]
- [redacted]

[redacted]

- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

Selection of two projects listed above will result in a cost-savings of up to [redacted] or approximately [redacted] cost reduction, as compared to the sum of the individual project cost.

5.2 Cost Containment Provisions

Anbaric recognizes the importance for any transmission system to provide the greatest net benefits to New Jersey's ratepayers, and commends the NJBPU for its decision to plan the infrastructure necessary to transition to a renewables-based economy, buoyed by offshore wind. The current interconnection process which considers each new resource incrementally and narrowly focusses on the system upgrades necessary only to accommodate each individual project in a serial manner is not an efficient or effective way to transform the state's generation mix from fossil fuels to renewable power. Europe is more than 20 years ahead of the US in its efforts to develop offshore wind resources, and countries like Germany, Belgium, and the Netherlands are far ahead in planning the grid specifically to accommodate these new resources.

While Europe has shown the effectiveness of transmission planning and early development in scaling this new industry, New Jersey is wisely introducing competition to the planning process.

Competition will drive down costs, give the NJBPU an array of projects to select among to serve ratepayers' needs most cost-effectively, and will give the NJBPU a broad range of cost structures and mechanisms to protect ratepayers from cost overruns. Anbaric recognizes that the public will only support these investments in infrastructure if it is affordable.

Anbaric supports the BPU's objective of minimizing costs to ratepayers and aligning incentives between ratepayers and project sponsors. Anbaric has made this a priority in developing our proposal. Anbaric is demonstrating this commitment with a mix of cost containment measures and incentives: (a) a cap on construction costs; (b) a competitive and compelling ROE with a waiver of all available ROE adders; (c) a declining ROE for costs above our bid price; (d) an incentive to drive costs below our bid price through sharing cost savings between the ratepayers and the Designated Entity; (e) a cap on equity at 45% of the capital structure; and (f) a commitment to schedule guarantees. These measures are outlined further below and in section 6.10:

- **Phased and coordinated development.** Anbaric's Boardwalk Power Option 2.2 offers NJ ratepayers a more certain path to completion, and a greater certainty of project costs as most of the onshore permitting work has been completed and site control is secured. Refer to Section 6.1 for site control information and Section 7.5 for permitting plan information.
- **Cap on Construction Costs**. Anbaric, the Designated Entity, agrees that it will not seek recovery through its Annual Transmission Revenue Requirement of any Construction Costs in excess of an amount equal to the Construction Cost Cap Amount, which for Anbaric's Boardwalk Power Option 2.2 is 125% of Indexed Bid Construction Costs based on the amounts set forth in Table 5.15.1.
- **Competitive Return on Equity.** The Designated Entity commits to file with FERC for an 8.5% ROE, subject only to the two adjustments described immediately below plus any adjustment due to Schedule Delays, and agrees to waive all customary FERC transmission incentives. The ROE shall apply to the initial investment of the Construction Costs for the life of the project, and Anbaric agrees not to seek a higher ROE pursuant to its rights under Section 205 of the Federal Power Act.
  - **Reduction in ROE for Costs Above Project Bid Estimates.** For Construction Costs that exceed the Indexed Bid Construction Costs up to the Construction Cost Cap Amount, the Designated Entity shall recover a reduced ROE of 5.75%. For Construction Costs that exceed the Construction Cost Cap Amount, the Designated Entity shall not recover any Construction Costs nor shall it earn any ROE on such amounts.
  - **ROE Incentive to Actual Project Costs Less Than Project Bid.** If the actual Construction Costs are less than the Indexed Bid Construction Costs, the Designated Entity shall be entitled to a 50 basis point adder to the project ROE for each 10%, or portion thereof, that Construction Costs are below the Indexed Bid Construction Costs. For example, if Construction Costs are 5% below the Indexed Bid Construction Costs, the ROE will be adjusted from 8.5% to 8.75% (8.5% plus 0.50% x (5%/10%)).

- **Capped Equity Structure**. The Designated Entity commits to an actual equity content of no greater than 45%. The Designated Entity shall be granted relief from this commitment if the capital market conditions do not remain normal and the Designated Entity does not have the ability to finance the Project with the proposed capital structure.
- **Schedule Delays**: The Designated Entity commits to a reduction in the Project ROE if the Project does not achieve Commercial Operation by the Target Project In-Service Date, as such date may be extended for Extension Events. For each month of delay after 6 months, the Designated Entity will reduce the applied for ROE by 2.5 bp per month of delay. The reduction in ROE will apply for up to an 18-month delay resulting in a maximum reduction of up to 30bp in ROE.
- **Liquidated Damages**. Anbaric intends to negotiate damages payments with its construction contractors to compensate for delays in project delivery. In the event that the Project is delayed and Anbaric collects these payments it pledges to pass this value on to NJ ratepayers.

Please refer to Appendix A attached to this document, the proposed *Schedule E to the Designated Entity Agreement*, attached to this document, for a more fulsome description of the cost containment measures and proposed contractual language to be inserted in the Designated Entity Agreement (including definitions for the terms capitalized above). Section 6.10 also provides further discussion and proposed contractual language for Schedule Delays and Liquidated Damages.

5.3 Cost Recovery

The following Section presents cost recovery information in a question-and-answer format to provide the NJBPU and PJM with a clear description of all necessary information. All requested information is in ***Bold Italic*** font.

1. ***Standard Regulated Cost Recovery: If developers are requesting cost recovery via a standard revenue requirement, please submit projected project and financing cost information and any proposed cost-cap mechanisms via the PJM submission forms. Indicate below that standard regulated cost recovery will be requested.***

   Proposers should include the following information via the PJM Competitive Planner submission tool when submitting projected project and financing cost information, any proposed cost-cap mechanisms, and whether values are estimated or firm commitments.

   Please provide the following:

   A. O&M, G&A Costs
      a. Cost estimates for Operations, Maintenance, and G&A FERC US of A 560-570 series, 920 series.

[redacted]

- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

b. *O&M escalation rates*

[redacted]

c. *Clarification if O&M, G&A expenses are covered in cost containment*

O&M and G&A are not covered in our cost containment proposals.

B. *Capital Structure*

a. *Debt-to-Equity ratio*

During construction, Anbaric will file with FERC for a deemed capital structure of no more than 45% equity. As discussed in Section 5.2 “Cost Containment” during operations Anbaric commits to a capital structure of no more than 45% equity.

b. *Cost of debt*

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[redacted]

C. *Depreciation*

a. *Book life by asset class*

Table 5-2 below shows the typical book life for the various components of the project. For modeling purposes Anbaric has assumed a[redacted]

Table 5-2 Summary Description of Depreciation Parameters

SUMMARY OF DEPRECIATION PARAMENTERS (Related to Switching and Voltage Conversion Stations and Tranmission Conductor)			
	FERC Account	**Peer Range (years)**	**Recommended Life**
Offshore Convertor Station			
All assets not included below	353	40	[redacted]
66 KV AC Switchyard	353.1	30-65	[redacted]
Interface Transformer	353.2	30-60	[redacted]
Filtering and Resistor Banks	353.3	15-25	[redacted]
Conversion Valves	353.4	20-40	[redacted]
HVDC Switchyard	353.1	30-53	[redacted]
Protection and Control Equipment	353.5	15-20	[redacted]
			[redacted]
400 KV Submarine Cable	358	40-60	[redacted]
			[redacted]
Onshore Convertor Station			[redacted]
All assets not included below (*)	353	36-50	[redacted]
Dynamic Breaking Resistor	353.3	30-65	[redacted]
Conversion Valves	353.4	20-40	[redacted]
Interface Transformer (*)	353.2	30-60	[redacted]
AC Switchyard (*)	353.1	30-65	[redacted]
Protection and Control Equipment	353.5	15-20	[redacted]
			[redacted]
AC Underground Cable			[redacted]
Cable	358	45-55	[redacted]
(*) Anticipated to have a longer physical Life as compared to the Offshore equipment			

b. *Tax depreciation method e.g., 5-year MACRS, half-year convention*

[redacted].

c. ***Book and tax depreciation schedule for CapEx and On-going CapEx***

[redacted]

D. Taxes

a. ***Federal and state income tax rates***

Federal and NJ state income tax rates are assumed to be 21% and 9%, respectively.

b. ***Description of blended income tax rate calculations, if any***

The following formula is used to blend the federal and state tax rates: federal rate + (1- federal rate) * state rate, because of the deductibility of state income tax for purposes of determining federal taxable income.

c. ***Property tax rate***

The project will seek PILOT (payment in lieu of tax) agreements with impacted municipalities to remove any uncertainty in future property tax payments. These discussions are currently underway [redacted]

d. ***Deferred income tax schedule, if appropriate***

[redacted]

E. Discount Rate

[redacted]

F. Revenue Requirement

a. ***Estimated annual revenue requirement for each proposed solution from commercial operation through the book life of the plant.***

Please see row 39 of the attached revenue requirement workbook.

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b. ***Provide revenue requirement build-up workbook, including depreciation, cost of debt, return on equity, federal and state income tax, property tax, and other costs e.g., O&M, A&G, other income tax.***

Please see the Attachment 12 Option 2.2 Revenue Requirement Buildup Workbook.

G. ***Incentive adders***

a. ***Describe any incentive adders and what it applies to***

As stated in Section 5.2 Anbaric will not seek any customary FERC transmission incentive adders, and would only receive a higher ROE if actual Construction Costs are below the Indexed Bid Construction Costs.

H. ***Exceptions to Cost Cap***

Please see Appendix A of this document for the terms and conditions of Anbaric's proposed costs caps, including exceptions thereto.

5.4 Cost Estimate Classification and Accuracy

[redacted]

5.5 Estimation of Annual Transmission Losses

[redacted]

Table 5-3 Assumptions Used for Estimation of Yearly Transmission Losses

[redacted]

[redacted]

Figure 5-1 Estimation of Annual Transmission Losses

[redacted]

[redacted]

[redacted]

5.6 Physical and Economic Life of the Project

[redacted]

[redacted]

[redacted]

[redacted].

[redacted]

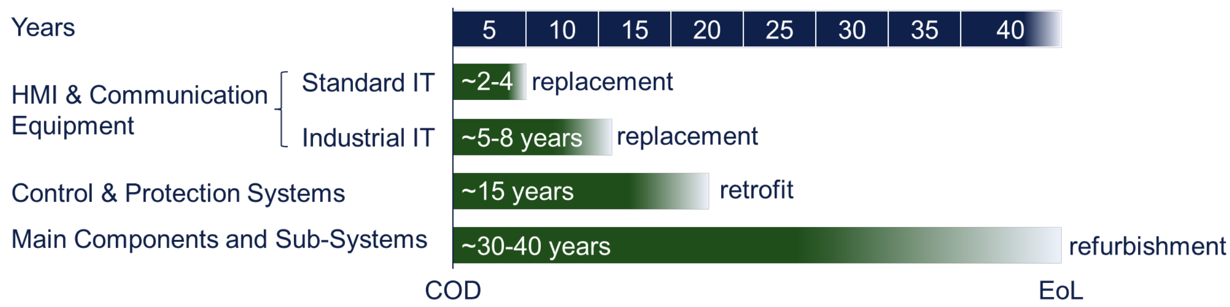

Figure 5-2 Illustration of Timing of Major O&M Activities for Converter Stations

In many HVDC projects, after the 40 years design lifetime has expired, extensions of lifetime can be realized through refurbishments based on the outcomes of an adequate assessment of remaining lifetime.

It should be noted that the offshore transmission infrastructure has a longer expected operational life than the typical offshore wind farm operational life of about 20-25 years. The benefit in separating transmission asset ownership from offshore wind farm ownership is that the transmission infrastructure can be used to connect the next windfarm after the first one has reached end-of-life, improving the utilization of the transmission equipment life and thus return on investment.

6 Project Risks and Mitigation Strategy

This Section addresses the potential risks of the Boardwalk Power Option 2.2 Project and Anbaric's plans to mitigate each risk. Anbaric maintains a project Risk Register where each risk or opportunity is logged and qualitatively assessed to establish the initial level of risk. A mitigation plan is developed according to results of the risk assessment. Post-mitigation risk levels are assessed to establish the consequent reduction in risk anticipated once mitigations are implemented. Actively managing all Project risks in this way optimizes schedule, cost, and/or other impacts (benefits) throughout Project development.

6.1 Site Control

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

6.2 BOEM Right of Way and Right of Use Easements

The Project requires issuance of a Right-of-Way/Right of Use Easement (ROW/RUE) or Grant from the United States Bureau of Ocean Energy Management (BOEM) for a transmission corridor from the offshore wind platform to the point where the transmission route enters New Jersey State Waters.

Anbaric has applied to BOEM for a ROW/RUE Grant for rights of way in federal waters of the outer continental shelf off the New Jersey shore. This application was noticed in the Federal Register on June 19, 2018. The BOEM ROW/RUE Grant Application review for the OCS components of the Project commenced in May 2019 and is still ongoing. Further, BOEM is presently completing internal and National Environmental Policy Act (NEPA) compliance review via a more expedient EA public review process. Anbaric will either amend this application to reflect the proposed right of way for this Project or file a new application with BOEM. With these mitigation measures in place, Anbaric has assessed the overall post-mitigation risk of not achieving ROW approval as low.

To mitigate the risk of delays, increased costs, or cancellation, Anbaric has conducted preliminary siting and routing assessments to identify potential environmental constraints, use conflicts, and cultural constraints associated with the Project facilities, and will further refine and verify the location of the proposed facilities (one or two OSPs and associated subsea transmission links) through additional site assessment and field surveys, including geophysical, geotechnical, and benthic surveys and marine archaeology assessments. In addition, Anbaric has been and will continue to follow best management practices to achieve the needed ROW/RUE. With these mitigation measures in place, Anbaric has assessed the overall post-mitigation risk of not achieving ROW approval as low.

6.3 Stakeholder Engagement

Anbaric will continue to operate under the philosophy that early, collaborative, and clear stakeholder engagement is essential for the successful development of any project. Offshore development in any form is often met with opposition from those potentially being impacted. Recognizing this, Anbaric has worked for years in New Jersey, distinct from any particular project under development, to understand the State, communities within, and interested parties and stakeholders statewide.

Given Anbaric's years of experience as a developer in New Jersey, Anbaric has an ongoing stakeholder engagement strategy for the Project to identify and communicate with stakeholders. Anbaric has consulted with the fishing industry, organized labor, environmental groups, state legislators, chambers of commerce, trade associations, regional science organizations, mariners and numerous other groups. These engagements will continue throughout the lifetime of the Project. A summary list of stakeholders Anbaric has already identified and communicated with is presented in Attachment 5 Stakeholder Engagement. By continuous and early stakeholder engagement, the Anbaric team has an opportunity to alleviate opposition risk which could result in a reduction of potential delays, lawsuits, or additional studies.

6.4 Construction Techniques

Concerning the specific geologic constraints or preexisting infrastructure, Anbaric will identify and document any special construction techniques necessary to mitigate risky conditions or circumstances where construction will occur along the transmission link route. These geologic constraints or preexisting infrastructure include, but are not limited to areas containing benthic substrate, existing cables, pipeline or other infrastructure, seafloor spans with sandwaves or megaripples, zones of contaminated sediment, or onshore waterbody crossings. Potential construction techniques to avoid geologic constraints or preexisting infrastructure can include long horizontal directional drilling (HDD) spans and dredging. Anbaric's approach to mitigating each specific risk is summarized in the following paragraphs.

6.4.1 Benthic Substrate

The submarine transmission link is expected to be buried beneath benthic substrate at an average depth between 4 ft (1.2 m) and 14 ft (4.3 m) below the authorized channel depth whenever the transmission link crosses a navigational shipping channel. Final burial depth is to be determined upon United States Army Corps of Engineers (USACE) consultation. The final burial depths may be increased (or decreased) based on the outcomes of a cable burial depth assessment. Regarding the burial methodology for the circuits, different burial methods can be used depending on the seabed characteristics. The most common method, and the method that will be used for the majority of the route, is direct burial of the circuits during the creation of the trenches. Trenching can be performed by a mechanical jetting plow and the burial can be performed using a water jetting system, which fluidizes the seabed using a combination of high-flow low-pressure and low-flow high-pressure water jets to allow the cable to sink to the target depth using its weight. In the case of the deeper burial depth of 14 ft (4.3 m), more specialized plows with vertical injectors or a jetting system with longer burial sleds will be used.

[redacted]

Anbaric has also commissioned a benthic community assessment survey along a portion of the offshore transmission link route, where it was determined that no rare species were found. Additional surveys of other portions of the marine transmission link route are expected to be completed after the bid is awarded to mitigate risk of encountering sensitive species or habitats.

6.4.2 Horizontal Directional Drilling

[redacted]

[redacted]

[redacted]

[redacted]

[redacted]

6.4.3 Existing Infrastructure

Where the Project's transmission link could cross existing infrastructure such as existing cables, pipelines, or other infrastructure, there is associated risk that any offshore construction would face, and Anbaric has identified mitigation steps below. The risk is divided between marine routes and the onshore transmission link route. To mitigate the marine risk, Anbaric follows best management practices and commissioned a high-resolution Geophysical (HRG) survey of a section of the Project transmission route prior to cable laying to identify and document all existing cables, pipelines, and other offshore infrastructure, as well as geophysical conditions on the seabed. A follow-up geotechnical sampling program was also carried out, along the same section of the route, to support the Project, employing vibracore sampling and sediment testing (physical, chemical, and thermal conductivity) at select locations along the proposed route. Additional geophysical and geotechnical surveys of other portions of the route are expected to be completed after the bid is awarded. With this information, wherever possible, Anbaric will design the transmission link layout to avoid crossings. Where crossings are unavoidable, Anbaric will cooperate with relevant agencies and infrastructure owners to develop a crossing agreement detailing measures that will be adopted to avoid damage to both existing cables, pipelines, or infrastructure, and new cables.

At each utility crossing, rock armor, concrete mattresses, or a protective sleeve will be installed to ensure minimum separation at the crossing point, protect the existing utility during construction, and protect the transmission link post-construction. The protection design for each crossing will be developed in accordance with crossing agreements and local site conditions. Final protection designs for each submarine utility crossing will be provided. Operations and activities maybe visually monitored by remotely operated vehicles (ROV) to confirm correct placement and configuration of the supports in accordance with the accepted design.

To mitigate onshore risks to cables, pipelines, or other infrastructure, Anbaric has performed a complete underground utility survey via utility locate and mark technology (radio frequency pipe and cable locators (RFL) as well as ground penetrating radar (GPR) systems) for the entire route including gravity pipes and water services to homes and businesses. The final route has been designed with minimizing interference with existing underground utilities. The survey is listed in Attachment 6 Documentation of Risk Mitigation.

6.4.4 Sandwaves and/or Megaripples

Seabed mobility, or sediment transport, which can develop transient sandwaves or megaripples, or result in erosion and scour, poses the risk of exposing or shifting buried cables associated with the Project. With any offshore cable project, cable exposure or changes in volume of protective sediment above buried cables can result in damage to cables from fishing gear, fishing activities, or vessels anchoring. The presence of sandwaves may also hinder initial cable burial and limit the achievable burial depth, and Anbaric details the below mitigation activities to address such risks.

To mitigate the risk posed by seabed mobility, Anbaric has commissioned a ground model describing the geological conditions (geological history and tectonic setting, ground topography/bathymetry, lithology and morphology, sediment mobility and other properties) as well as seismicity. This desktop study was used to provide recommendations for geophysical and geotechnical surveys that have been carried out, which in turn provide the necessary data for a detailed cable system design. The risk of cable exposure as a result of mobile surface sediments can be further mitigated by establishing a Reference Seabed Level (RSBL), which determines the non-mobile level below which the seabed will not fall within the lifetime of the transmission link, and Maximum Seabed Level (MSBL) the highest possible seabed level during the lifetime of the OWFs. Additional mitigations may include, but are not limited to, routing away from significant bathymetric features, excavating or dredging significant mobile features, and/or adapting the burial depth.

6.4.5 Contaminated Sediment

During construction it is possible that contaminated sediments may be encountered. Mitigating disturbance of contaminated sediment caused by the cable burial operation will reduce impacts to the surrounding environment by avoiding contamination and subsequent cleanup activities, reducing overall cost. In the event that contaminated sediment is encountered, Anbaric is committed to devoting the necessary funds to mitigate any potential impacts and does not expect that potential impacts would result in Project delays.

To minimize this risk, Anbaric has conducted a desktop analysis to identify pre-existing areas and routed the transmission link around these areas. Areas with a high potential for contaminated sediment will be avoided, where practicable. In addition, a sediment/soil survey may be conducted to sample sediment along the transmission route where construction will occur to identify any areas that may include zones of contaminated sediment. A Phase I Environmental Site Assessment (ESA) may also be required to identify past releases of hazardous materials to the environment. The transmission link route may be adjusted to avoid any areas with identified contaminants, as warranted. Anbaric will identify specific measures and use best management practices to reduce risk associated with contaminated sediments, as required.

6.4.6 Dredging

[redacted] This temporary gravity cell or cofferdam will be used to install the HDD conduit to connect the submarine transmission link with the onshore transmission link portion and will isolate construction work from the water column thereby minimizing underwater acoustic impacts. Prior to commencing dredging activities, Anbaric will identify and document specific geologic conditions and pre-existing infrastructure found within or near the Project area and develop a plan to mitigate these risks through consultation with USACE and other relevant agencies and stakeholders. Anbaric will follow agency requirements and best management practices to mitigate any risks associated with dredging for gravity cell and cofferdams and will minimize dredging for land fall approaches.

6.4.7 Waterbody Crossings

The Project will involve instances of onshore waterbody crossings, which are expected to be traversed using HDD techniques. As such, there is a risk of impacting pre-existing buried infrastructure resulting in damage to those structures and/or Project associated equipment. In addition, there is also a risk of impacting jurisdictional waters of the U.S. via “frac outs”, which are defined as unintentional return of drilling fluids to the surface during horizontal directional drilling. Such encounters could result in project delays and or cost overruns. To mitigate this risk, Anbaric has and will follow best management practices such as conducting utility location surveys[31] identifying and documenting the locations of any onshore waterbody crossings (e.g., gas pipelines) in or near the Project area. Anbaric has designed the transmission link layout to avoid waterbody crossings where practicable. However, some waterbody crossings are unavoidable; therefore, Anbaric will develop a crossing agreement with relevant federal and state agencies and stakeholders detailing the measures that will be adopted to avoid damage to both the existing waterbody crossing and to the transmission link. Anbaric will monitor operations visually to confirm no interference between the onshore waterbody crossing and placement of the transmission link. The HDD operations will include monitoring of potential fracture or overburden breakout of the down-hole water/bentonite slurry to minimize the potential of drilling fluid breakout. For extra precaution, a visual and operational environmental conditions monitoring program will be implemented during HDD operations to observe and monitor for fluid breakout conditions.

6.5 Construction Related Outages

As a result of planned construction-related outages on existing PJM transmission facilities, the Project has factored in margins in the Project Schedule to account for such scenarios. To mitigate this risk, Anbaric will coordinate with PJM in identifying the relevant planned outages as listed on the PJM - Project Status & Cost Allocation website[32] where a table provides project status and cost allocation information for baseline, network and supplemental projects in PJM's Regional Transmission Expansion Plan (RTEP)[33], and uses this information to incorporate expected duration of planned outages that could impact construction of the Project into the Project schedule, with margin. Additionally, upon selection Anbaric will initiate the interconnection process and upon completion, will enter into ISAs and ISCAs with PJM and the respective TO’s to address schedules and contractual agreements for the interconnection process.

6.6 Time of Year Restrictions

There may be temporal restrictions on construction activities during sensitive periods for protected species. For example, it is possible that time of year restrictions for certain activities (e.g., dredging) may be required to reduce impacts to vulnerable life stages and spawning periods of fish, crustaceans, and molluscs that could be present in the area. The potential presence of federally-listed breeding (e.g., piping plover [*Charadrius melodus]*) and migratory (e.g., red knot [*Calidris canutus rufa*]) shorebirds in the region may also restrict beach access and landfall and onshore activities, including HDD, during nesting season.

To reduce collision risk to the federally-endangered North Atlantic right whale (*Eubalaena glacialis*), the National Oceanic and Atmospheric Association (NOAA) requires all vessels 65 feet (19.8 meters) or longer to travel 10 knots or less in designated North Atlantic right whale Seasonal

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[31] Maser Consulting, Topographic Roadway Survey, 2016.
[32] https://www.pjm.com/planning/project-construction
[33] https://learn.pjm.com/three-priorities/planning-for-the-future/rtep.aspx

Management Areas (SMAs) in the Mid-Atlantic between 1 November to 30 April [redacted]

Restrictions on construction activity may also occur during high tourist traffic periods such as Memorial Day to Labor Day. To mitigate this risk, Anbaric will identify known or potential time of year restrictions on construction activity, particularly related to listed species or beach restrictions, and incorporate the expected delays, with margin, into the Project schedule. It is expected that consultation with state and federal agencies and local stakeholders will be conducted to identify specific time of year restrictions with respect to the expected construction schedule along various segments of the transmission link route.

6.7 Wetlands

Although minor, some aspects of construction for the Project will occur within or near wetland resources. Wetland delineations in areas along the onshore corridor, as well as the converter station and substation sites, have indicated potential impacts to jurisdictional Waters of the United States (WOTUS). Anbaric has endeavored to avoid wetland impacts to the extent practicable through design, siting and the use of HDD. Project development or mitigation costs associated with wetland impacts are anticipated to be between [redacted]. To mitigate this risk, Anbaric will identify compensatory mitigation estimates needed to compensate for wetland impacts, if any occur. In the event losses cannot be mitigated, Anbaric will offset those with wetland credits.

6.8 Supply Chain and Material Procurement

Anbaric is aware potential supply chain constraints or material procurement risks, and is proactively working to ensure that components such as transmission cables, installation vessels, and/or staging areas and ports will be available for delivery, shipping, storage, and installation according to Anbaric's schedule. Vendor selection is an important factor in supply chain management.

[redacted]

[redacted]

6.9 Project on Project Risks

Some in the offshore wind industry have identified project-on-project risk, specifically the risk of procuring the transmission systems for offshore wind separately from the wind power generation projects, as having the potential to significantly increase the risk of delay of one or the other, which could result in financial losses to the on-schedule entity and perhaps to the ratepayer as well.

Anbaric's view is that separate procurement of transmission in fact mitigates risk by increasing the likelihood of timely delivery of transmission, and uses scarce grid resources more efficiently, by deploying the right quantity of transmission in the right places, while better protecting the environment. The root causes of delays in transmission availability have generally been the result of a lack of planning and coordination between the transmission provider and the generator, not the separation of one project from the other. US offshore wind developers are already facing challenges connecting to the onshore grid, leaving ratepayers exposed to both project delays and excessively high interconnection costs due to a lack of clarity in grid connection costs.

By holistically considering NJ's 2033 offshore wind goal of 7,500 MW and planning a transmission system with all upgrades necessary to deliver this power to the ratepayers, Anbaric's Boardwalk Power Projects will be the most cost-efficient for NJ ratepayers and simplify transmission interconnection for the associated wind generation projects. Anbaric's projects developed in furtherance of a planned transmission system will make the best use of existing infrastructure and require less system upgrade costs.

Anbaric has engaged with the communities along the proposed routes of the cables, as well as fishing interests and other maritime users, to minimize points of possible disagreement and ease the permitting process of a constructable route. Further, Anbaric's use of HVDC technology will minimize the number of cables that come ashore leading to far less disruption to the residences and towns than AC alternatives.

[redacted]

By taking all of the mitigating steps outlined above in advance of procuring the offshore generation, Anbaric, and thus PJM and the NJBPU, are reducing project-on-project risk by allowing adequate time to plan, permit, and build the offshore transmission system necessary to transform New Jersey's energy supply away from fossil fuels and toward offshore wind.

6.10 Project Guarantees

Anbaric recognizes the importance of delivering the Project on time and on budget. Anbaric is confident that the proposed construction schedules outlined herein are deliverable based on the extensive development work and investment made to date in the Project. As such the Designated Entity is prepared to make multiple commitments in support of the schedule and cost objectives outlined by PJM and NJBPU. The cost containment incentives and guarantees are described in detail in Section 5.2 and summarized below in section 6.10.1.

Anbaric is also proposing a schedule guarantee whereby Anbaric will reduce the Project ROE to be applied for with FERC by up to 30bps due to schedule delays. These proposed delay penalties would be in addition to any cost overrun penalties described in Section 5.2 should a cost overrun also materialize in a delay scenario. The proposed language to be included in the Designated Entity Agreement is as follows:

1) Schedule Delays: The Designated Entity commits to a reduction in the Project ROE if the Project does not achieve Commercial Operation by the Target Project In-Service Date, as such date may be extended for Extension Events. The reduction in Project ROE will be in accordance with the following table ("Schedule Guarantee"):

Schedule Guarantee	
Months of Delay	Total Reduction in ROE
0 to 6	0.0 basis points
6 to 18	2.5 basis points/month
18 months	30.0 basis points

The Schedule Guarantee is subject to a maximum reduction in the ROE of thirty (30) basis points. The Target Project In-Service Date is subject to extension if the Designated Entity's ability to perform the Scope of Work is delayed due to an Extension Event

"Commercial Operation" means the Project (i) has been completed in accordance with the Scope of Work in Schedules B this Agreement, (ii) meets the criteria outlined in Schedule D of this Agreement and (iii) is under Transmission Provider operational dispatch.

"Extension Events" means (i) any delays resulting from the enactment, adoption, promulgation, issuance, modification, or repeal of any statue, rule, regulation, order or other applicable law or changes in the enforcement, interpretation or application of any statue, rule, regulation, order or other applicable existing law, (ii) any delays associated with any PJM, New Jersey BPU, or siting authority directed additions to or modifications of the Scope of Work, (iii) any delays as a result of a Force Majeure[34], (v) any delays in permitting or

[34] According to the Designated Entity Agreement Section 10.0, "an event of force majeure shall mean any cause beyond the control of the affected Party, including but not restricted to, acts of God, flood, drought, earthquake, storm, fire, lightening, epidemic, war, riot, civil disturbance or disobedience, labor dispute, labor or material shortage, sabotage, acts of public enemy, explosions, orders, regulations or restrictions imposed by governmental, military, or lawfully established civilian authorities, which in any foregoing cases, by exercise of due diligence, it has been unable to overcome. An event of force majeure does not include: (i) a failure of performance that is due to an affected Party's own negligence or intentional wrongdoing; (ii) any removable or remedial causes (other than settlement of a strike or labor dispute) which an affected Party fails to remove or remedy within a reasonable time; or (iii) economic hardship of an affected Party."

resulting from injunctive action by a court, (iv) any delays resulting from breach, default, interference, or failure to cooperate by (A) Transmission Provider of its obligations under this Designated Entity Agreement or (B) any Transmission Owner in connection with any interconnection agreements and (v) any delays as a result of a request by Transmission Provider to delay or suspend any activities associated with the Project or delays in the Project due to a delay in the Transmission Provider completing its scope of work.

"Scope of Work" means the approved scope of work for the Project.

"Target Project In-Service Date" means [_________].

Additionally, Anbaric intends to negotiate liquidated damage (LD) provisions with its primary contractors for the Project as part of finalizing construction contracts. The LD provisions are expected to include schedule guarantees that will compensate the Project for delays in Project delivery. In the event that the Project is delayed, and the Designated Entity collects these damages, it pledges to pass this value on to NJ ratepayers which will further mitigate risk and cost to the ratepayer.

2) Liquidated Damages: The Designated Entity commits to use commercially reasonable efforts to negotiate delay liquidated damage provisions ("Schedule LDs") with the primary contractor(s) for the Project. To the extent the Project is delayed and the Designated Entity collects Schedule LDs from its contractor(s), the Designated Entity commits to pass through the value of the Schedule LDs received by the Designated Entity.

Please refer Appendix A attached to this document, the proposed Schedule E to the Designated Entity Agreement, for the proposed contractual language to be inserted in the Designated Entity Agreement (including definitions for the terms capitalized above).

6.10.1 Contract Provisions to Address Cost Risk

In Section 5.2, Anbaric described its cost mitigation and cost cap proposals, and now refers the reader to Section 5.2 for a complete description of the Company's approach. Anbaric described the following measures to address cost risk and provide a construction cost guarantee:

- **Cap on Construction Costs.** For Anbaric's Boardwalk Power Option 2.2 is 125% of Indexed Bid Construction Costs based on the values set forth in Section Table 5-1.
- **Competitive Return on Equity.** The Designated Entity commits to file with FERC for an 8.5% ROE, subject only to two adjustments other than the Schedule Delays adjustment: i) a Reduction in ROE for costs greater than the Indexed Bid Construction Costs; and ii) an ROE Incentive if actual Construction Costs are less than Indexed Bid Construction Costs.
- **Capped Equity Structure.** The Designated Entity commits to a capital structure based on equity of no greater than 45%.

6.11 Additional Risks

Offshore transmission, whether as an independent project or bundled with generation, faces the same risks as any transmission project, with the added complexity of working offshore and addressing additional stakeholder concerns. Offshore transmission projects typically encounter the following risks:

- Interconnection risks to the grid, including upgrade costs
- Securing site control for converter stations and associated equipment
- Identifying a route that can be permitted, constructed, and obtain community, governmental, and stakeholder support along its full length
- Designing the project with the technology appropriate to its purpose and defining a cost affordable to ratepayers
- Securing financing
- Locating a coastal property that is suitable for the transition from buried marine cable to onshore underground route. Often the ideal locations for underwater routes close to shore do not align with locations for nearby underground routes because of community, environmental, or construction feasibility concerns.
- Permitting in state and federal waters
- Overcoming objections, including potential litigation, from stakeholders to the project, the route, or any impacts

Addressing each of these risks can reduce costs, increase benefits, and/or keep the project on schedule and ultimately benefit the NJ ratepayer. The SAA process undertaken by the NJ BPU and PJM is precisely the path to mitigating these risks and ensuring a cost-efficient outcome for the ratepayers.

Many of the transmission risks listed above can be mitigated by a planned ‘transmission-first’ approach to an offshore wind build out. Transmission is arguably the most time consuming and difficult element of offshore wind development, often requiring five to eight or more years to finish, due to siting, permitting and necessary grid upgrades. Planning the transmission system up front de-risks the buildout of offshore wind later.

The early buildout of ‘transmission-first’ by the Dutch offshore utility, TenneT, in German waters, has been cited as a reason that transmission-first creates project-on-project risk. However, it was the undercapitalization of projects, an inadequate supply chain, and other early growing pains, not the separation of transmission and generation, that caused the earlier issues. Since then, building transmission-first has gained in popularity in Europe and led to subsidy-free offshore wind procurements and a growing list of nations moving from radial transmission to planned transmission systems.

Comprehensive system planning minimizes disturbance of an area by ensuring installed infrastructure is sized at the outset to manage all phases of the eventual buildout. This approach can save hundreds of millions of dollars in construction costs.

Similarly, approaching state and federal permitting authorities with a single, comprehensive construction schedule mitigates risks associated with multiple individual construction schedules.

[redacted]

Additional risks Anbaric has identified include potential restrictions on construction. To mitigate this risk, Anbaric will follow best management practices by reviewing environmental studies pertinent to the Project area, identify species most likely to be affected and the associated construction limitations, and build float into the construction schedule to accommodate the restrictions.

To mitigate risk of delays in the interconnection process due to the continuing substantial workload at PJM, Anbaric will follow best management practices by assessing the timelines of other projects in the queue, maintain good communication and relationships with PJM, and add margin in the development schedule to accommodate potential interconnection delays. Additionally, upon selection Anbaric will initiate the interconnection process and upon completion will enter into Interconnection Service Agreement's (ISA's) and Interconnection Service Construction Agreement's (ISCA's) with PJM and the respective TO's to address schedules and contractual agreements for the interconnection process.

6.12 Documentation of Risk Mitigation

The following is a list of studies and surveys prepared to mitigate risks identified above. Similar studies, reports, and permit applications are included for all bid options submitted and are included in Attachment 6 Documentation of Risk Mitigation.

- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]
- [redacted]

7 Option 2.2 Environmental Impacts and Permitting

7.1 Environmental Protection Plan

Anbaric is a steward for the environment and has conducted extensive environmental due diligence studies, identified impacts to the environment, as well as both terrestrial and aquatic species, and cultural resources that may be impacted by the Project. Anbaric has accounted for and identified potential impacts and developed avoidance, minimization, and mitigation measures to protect these sensitive resources to the greatest extent practicable. For detailed information on resources identified, mitigation measures, and recommended approaches to Project design and construction, please refer to Attachment 15 Environmental Protection Plan.

Offshore impacts include direct disturbance to the seafloor associated with the installation and burial of the HVDC transmission link. Impacts to sensitive marine resources (e.g., protected flora and fauna, high quality benthic habitat, archaeological resources) are expected to be largely avoided through informed siting of the transmission link corridor. In areas where avoidance is not possible, the Environmental Protection Plan (EPP) outlines various minimization and mitigation measures based on industry best practices. Sound impacts associated with installation of the offshore substation platform (e.g., pile driving), impacts to water quality, and impacts associated with Project-related vessel traffic will also be minimized and mitigated using a number of best management practices (e.g., adherence to time of year restrictions for marine mammals), which are outlined in the EPP. The EPP also discusses measures to reduce impacts to offshore activities that will be ongoing during Project construction such as commercial shipping and recreational and commercial fishing. Impacts during operations are expected to be minimal in comparison to construction and associated with routine maintenance of infrastructure.

Onshore impacts include direct disturbance to terrestrial landscapes associated with the installation of the HVDC transmission link. Impacts to sensitive terrestrial resources (e.g., protected flora and fauna, wetland areas, areas of cultural significance) are expected to be largely avoided through informed siting of the transmission link corridor. In areas where avoidance of these resources is not possible, the EPP outlines various minimization and mitigation measures based on industry best practices. As the majority of direct impact are expected to occur along public thoroughfares, the EPP also discusses measures to reduce construction impacts (e.g., sound, dust, local traffic disruption, spill prevention). The EPP also includes analysis of the potential effects on tourism, public health and safety, workforce, economy, and demographics. Impacts during operations are expected to be minimal in comparison to construction and associated with routine maintenance of infrastructure.

7.2 Environmental Benefits

Anbaric's plan to utilize HVDC technology as opposed to HVAC technology will result in a substantial reduction in impacts. The power capacity of an AC cable is limited compared to HVDC cables, and the AC power capacity reduces as the transmission distance increases. In the case of the New Jersey offshore wind farm capacities, at least three AC cable circuits would be needed, each with their own trench, to transmit energy from one offshore wind farm. In contrast, an offshore windfarm connected by means of DC technology will only require one cable circuit and one trench. Hence, the transmission links for four offshore wind farms (envisaged in the Pathways and including the platform interlinks), HVAC radial cables would require up to 11 new subsea cable trenches while

HVDC cables only requires the installation of up to four trenches, resulting in substantially less direct impacts to the seafloor.

Compared to an equivalent HVAC subsea cable installation, Anbaric's HVDC offshore electric transmission link will result in significantly reduced temporary and permanent coastal and marine environmental impacts. This is because HVAC cables require multiple seabed trenches (three or more) to install or bury each three-phased submarine cable circuit. The Project's equivalent voltage HVDC submarine electric transmission cable only requires one seabed trench for installation. Therefore, the Project's HVDC submarine transmission link installation will result in significantly less or reduced direct temporary and permanent seabed area impacts and associated environmental effects to fisheries, benthic resources or other aquatic resources compared to an equivalent offshore HVAC radial transmission system currently proposed by OSW developers.

Each HVAC and HVDC submarine transmission link will require a new shoreline landfall transition junction where the submarine cable system is spliced onto the onshore transmission cable system via shoreline underground transition vaults. This means that an HVAC radial system will require up to five or six HDD coastal landfall sites. An equivalent HVDC radial collector system will only require three shoreline landfall sites. This means that landfalling multiple HVAC submarine cable circuits would result in more of the same type of temporary and permanent impacts than using HVDC radials or collector platforms. This also shows that HVDC bulk transmission technology would result in significantly less temporary and permanent impacts to sensitive coastal and marine environmental resources compared to HVAC technology.

Construction of the planned HVDC OSP to interconnect with the phased build out of the OWF will be supported and anchored to the seabed by either monopile or lattice foundation structures. A lattice foundation structures use four pin pilings at its base. In addition, riprap rock scour protection will be placed on the seabed around each monopile or lattice leg foundation structure to avoid or minimize piling section loss due to tide or current induced seabed scour around the base of the structure. Although these activities will result in loss of existing seafloor habitat, it will create complex benthic habitat that can be utilized by pelagic and benthic species as a net environmental benefit. These complex habitats in the water column (pilings) and seabed interface (scour protection) will attract a variety of sea life that would not inhabit these locations in the absence of these structures.

As part of its post-construction environmental monitoring plant, Anbaric expects to make direct observations and collect data over three years on the new OSP structures to assess biofouling, biodiversity and abundance of marine fisheries and seabed creatures related to more diverse marine habitat conditions. It is expected that these environmental monitoring investigations and reporting will be incorporated by BOEM and state and federal agencies as part of their National Environmental Policy Act (NEPA) and Agency permitting reviews. Anbaric anticipates that the steel piling or lattice structures, as well as the rock riprap scour apron will attract new pelagic and benthic species that did not inhabit these areas previously. The post-construction OSP environmental monitoring observations will help identify which pelagic and benthic species will utilize these structures. For more detailed information, refer to Attachment 16 Environmental Benefits.

7.3 Fisheries Protection Plan

A Fisheries Protection Plan (FPP) has been developed for the Project to ensure the appropriate management of potential impacts to commercial and recreational fisheries during Project activities. For more detailed information, refer to Attachment 17 Fisheries Protection Plan. The FPP includes a characterization of commercially and recreationally significant marine communities and fishing vessel activity in the coastal and offshore sections of the Project area to identify potential impacts to these marine communities and the local fishing industry.

Potential impacts to the fishing industry from the Project are analyzed in the FPP by Project phase. During construction and decommissioning, impacts may occur due to the effects of increased underwater sounds, increased vessel activity, seafloor disturbance, benthic habitat alteration, direct mortality or injury to fish species, sediment deposition, increased lighting, temporary displacement of fish species and fishing vessels from prime fishing grounds, and accidental spills/contamination. During operations, impacts may occur due to the effects of increased electromagnetic fields (EMFs) from Project transmission link and increased vessel activity during maintenance activities. The potential level of impact through each phase of the Project was assessed from pre-construction through Project close-out.

The FPP includes a comprehensive list of proposed avoidance, minimization, and mitigation measures to reduce the potential impacts identified. These measures are based off of the most up-to-date industry guidelines and best practices, including but not limited to those developed by BOEM, NOAA, and the Mid-Atlantic Fishery Management Council. Examples of measures included in the FPP are implanting a fisheries gear loss plan, using ramp-up procedures to reduce impacts from pile driving, and commitments of ongoing collaboration with third-party researchers to collect fisheries data following Project construction and installation.

The FPP will also include a plan to implement informal and formal communications and collaborations with federal and state resources, regulatory agencies, local fisheries groups, and other environmental stakeholders during all phases of Project development to ensure reasonable accommodations are provided to commercial and recreational fishing for safe access to fishing grounds in and near the Project area and to incorporate stakeholder input into the proposed avoidance, minimization, and mitigation measures.

7.4 Stakeholder Identification

Anbaric is a small, majority employee-owned company which designs, develops, and builds projects in the public interest. From Anbaric's two-plus decades of experience focusing on serving the public interest with renewable energy projects, Anbaric identifies stakeholders at the earliest stages of development and continues engagement throughout the development process. Anbaric recognizes early stakeholder engagement as the only way to create successful projects. This process ensures projects have community and stakeholder understanding and support from the inception. Anbaric's engagement philosophy seeks stakeholder input early on to invite feedback to create better routes, fewer environmental effects, greater community acceptance, and fewer risks to the development process. Rather than only a project specific approach, Anbaric has worked with stakeholders to develop a sustainable approach to offshore wind transmission. Anbaric is committed to a process that sees stakeholder engagement as a never-ending process, from concept inception, completion of construction, and ongoing operation through the life of a project.

For example, Anbaric implemented an early and proactive engagement approach prior to the SAA solicitation by working with regulators to permit the [redacted]. This was made possible through direct outreach efforts with key groups, including appropriate government regulatory agencies, municipal government officials, state legislators, chambers of commerce, trade associations, local community leaders, fishing organizations, environmental groups, regional science organizations, mariners, property owners, residents, and business owners.

Anbaric initiated this early engagement to understand stakeholder and agency concerns, in particular the scientific, socio-economic, and environmental issues. Anbaric has reviewed the best available science and appropriate best management practices and has identified several possible solutions to these concerns. See Attachment 15 Environmental Protection Plan for additional information.

These engagements will, where appropriate, continue throughout the lifetime of the Project. See Attachment 5 Stakeholder Engagement for more information. Discussions with the communities and stakeholders are ongoing and will continue through the development and construction process. Anbaric intends to fully engage all relevant communities and stakeholder groups to address their concerns and minimize impacts to the environment and the general public.

If awarded a project through this solicitation, Anbaric will look to establish a stakeholder working group, with welcome involvement by the State, and will commit to providing regular stakeholder engagement reports to the NJDEP, NJBPU, and other relevant state departments/agencies. In addition to ongoing direct meetings with stakeholders, Anbaric intends to establish an ongoing virtual open house for our projects. This platform will allow for information to be shared with the public, and also for Anbaric to receive feedback. We intend to have a public Q&A component so that we are being fully transparent with all interested parties as the project evolves and progresses.

7.4.1 Environmental Justice

The assessment of potential effects on overburdened community and minority populations is required under Executive Order (EO) No. 12898 (1994). EO 12898 requires federal agencies to adequately identify and address disproportionately high health and/or environmental effects of federal actions on overburdened communities. A thorough assessment of potential impacts, including the identification of avoidance, minimization and mitigation measures will be completed once the bid solicitation is awarded.

Based on preliminary information, potential direct and indirect effects may include reduced housing availability, disrupted traffic patterns, and environmental disturbances associated with construction. Preliminary avoidance, minimization, and mitigation measures to reduce potential effects on these populations have been identified. Potential impacts are not expected to be different for overburdened communities compared with the overall population. Furthermore, the Project will likely increase employment and economic opportunities; these opportunities are expected to be similarly benefit the general population and overburdened communities. See Attachment 15 Environmental Protection Plan for additional information.

7.5 Permitting Plan

A significant portion of the Project has already been permitted, including one onshore transmission link route to the [redacted]; furthermore, an application for a Bureau of Ocean Energy Management (BOEM) Right of Way/Right of Use Grant or Easement (BOEM ROW/RUE) has been submitted. The OSP and a portion of the submarine transmission link are located in waters of the Outer Continental Shelf (OCS) requiring the BOEM ROW/RUE. This application was noticed in the Federal Register on June 19, 2018. The review is ongoing and BOEM is presently completing internal and National Environmental Policy Act (NEPA) compliance review via a more expedient Environmental Assessment (EA) public review process.

The Project's submarine transmission link, traversing through New Jersey State Waters is currently under review by the New Jersey Department of Environmental Protection (NJDEP) and United States Army Corps of Engineers (USACE). It should be noted that the presently permitted segments of the Project were determined to be environmentally acceptable with acceptable impact mitigation and approved installation methods and means for both land and water work activities.

The onshore linear routes from the Project's shoreline Landfall Site [redacted] has already been reviewed and permitted by the NJDEP and is presently under review by the USACE under their applicable jurisdictions. The additional Project infrastructure not included in the NJDEP and USACE applications now under agency review will require additional agency and stakeholder consultations and permitting actions. The installation of this additional Project infrastructure will utilize the same low-impact installation methods and impact mitigation strategies previously approved by the NJDEP and USACE in the recent past for other projects.

The fundamental Project permitting strategy is to complete the remaining and ongoing state and federal regulatory permit reviews for the remainder of the Project and continue to take a holistic and integrated approach to the combined agency and stakeholder review processes. This includes collection, analysis, and reporting of environmental baseline data, fully addressing anticipated impacts and mitigation, and reasonable accommodation of stakeholder/agency concerns.

Anbaric will consult with BOEM, the NJDEP, and the USACE on the process for amending its applications and approvals to include the remainder of the Project's onshore and offshore components now being proposed, including completing its BOEM EA review and expected issuance of an expected NEPA Finding of No Significant Impact (FONSI).

Anbaric has conducted extensive review of all federal, state, and local regulations, and ordinances to accurately account for regulatory implications of the Project. This detailed review, determinations of applicable permits and processes to be conducted with the governing agencies, as well as consultations and permit authorizations required, pending, or received by Anbaric to date are provided in Attachment 18 Permitting Plan.

8 Project schedule

8.1 Scheduling Background

Activities listed on the Project Schedule include the following main tasks:

- Onshore and offshore licensing and permitting, ROW, and land acquisition
- Design and engineering
- Manufacturing and procurement
- Construction
- Commissioning and testing

Anbaric based the Project Schedule on current market information and RFI responses from various suppliers as well as experience from subject matter experts in project design, environmental permitting, and project management. The timeline presented in the Project Schedule is based on a sample Commercial Operation Date [redacted] to show an example of a project timeline. Actual dates would change upon award once the solicitation schedule is finalized by NJBPU and PJM. This date is subject to change as project solicitations are assigned by NJBPU and PJM. Working backwards from this COD, Anbaric has developed the Project Schedule to ensure all necessary activities are completed in a timely fashion.

8.2 Assumptions

8.2.1 Permitting and Risk Assessment

Anbaric has used industry experience to estimate permitting durations for federal, state, and local permits for both onshore and offshore. These timelines depend heavily on the type of deliverables required by regulatory agencies, duration of the agency review process, and duration of Anbaric's modification and revision window. The Project Schedule has accounted for agencies and Anbaric review process while noting some permitting work can be completed concurrently.

Once Anbaric receives BOEM's Determination of No Competitive Interest (DNCI), BOEM should be able to grant the ROW to Anbaric without delay, as the Draft EA completed by BOEM for the NY Bight commercial lease sale contemplates and includes the activities that would be anticipated upon issuance of such a grant. Anbaric will submit all necessary assessments (i.e., Environmental Assessment if needed) and construction plans (i.e., General Activities Plan) to comply with regulatory requirements (i.e., NEPA). Furthermore, consultation with appropriate agencies, such as the United States Army Corps of Engineers (USACE), will also take place and has been accounted for in the Project Schedule. Other state and local permitting activities must be completed concurrently with federal permitting. [redacted]

Some permitting can be completed in parallel with the design and engineering of the Project but permitting activities must be finalized before construction can begin. [redacted] This allows design and procurement activities to be finalized concurrently with permitting activities. Some minor overlap between the end of permitting and the beginning of construction of the onshore substation expansion activities is modeled as Anbaric anticipates a short timeline for permitting activities.

For Boardwalk Power Option 2.2, [redacted] is quite conservative because the onshore underground transmission link route is already permitted for one cable circuit, and site acquisition is almost complete at the time of Option 2.2 solicitation submission. Anbaric has worked with BOEM on a ROW/RUE Grant application which will be amended to reflect this proposed route. On August 10, 2021 BOEM published the Draft Environmental Assessment for the NY Bight[35], which covers activities anticipated to follow issuance of a right-of-way, and thus should allow for the expeditious approval of ROWs. As with any project of this size, scheduling risks are possible. A detailed risk assessment concerning the permitting, site control, ROW, and time of year restrictions can be located in Section 6.

8.2.2 Design, Procurement, Construction, and Commissioning

[redacted]

Anbaric notes that a schedule this preliminary is solely based on the current market's supply chain availability and cannot predict future delays in schedule by contractors or manufacturers during the length of the project.

8.3 Boardwalk Power Option 2.2

Boardwalk Power Option 2.2 activities and their associated durations are shown in Figure 8-1 below. A more detailed schedule is included in Attachment 11 Project Schedule. The Boardwalk Power Option 2.2 duration is typical of projects seen in this industry.

[35] https://www.boem.gov/renewable-energy/state-activities/new-york-bight

[redacted]

Figure 8-1 Boardwalk Power Option 2.2 Example High Level Project Schedule Timeline

9 Project Constructability

This Section illustrates how Anbaric has identified and addressed the Project's constructability and highlights how Anbaric is positioned to further develop and complete the Project upon award. Key tasks Anbaric has completed include major ROW and site control holdings [redacted] Anbaric has already completed multiple studies to test the feasibility of the solution and has developed single line diagrams for the offshore substation, onshore converter station, and expansion of the POI substation. Anbaric has based the constructability of these solutions on current HVDC technology and has gathered information from vendors within the industry to provide technology descriptions, schedule of implementation, procurement timelines, and risk in relation to supply chain and cost estimation.

The following bullets explain the status on each topic for Boardwalk Power Link Option 2.2:

- **Cost**: Anbaric obtained CAPEX and OPEX estimates from suppliers and verified with internal cost databases and developed a cost benefit analysis. See Attachment 2 Cost Benefit Analysis. Also, see Section 5, for detailed project cost explanation.
- **Onshore ROW**: [redacted]
- **Onshore site control**: [redacted]
- **Offshore route**: The offshore route has been determined using a GIS based desktop study to ensure it avoids obstructions and difficult seabed soil types and follows suitable bathymetry. Anbaric also considered risks involved in aligning with other offshore space users such as navigational channels, fisheries and sand borrow areas. More details can be found in Attachment 1 Analysis Report. An extensive portion of the offshore route has been surveyed. The geotechnical and geophysical surveys were used to map, identify, and otherwise characterize potentially hazardous features along the offshore transmission link routes. This ultimately reduces the risk of unanticipated delays or increased cost of construction as Anbaric has the ability to avoid these features. Soil sampling has been

performed at offshore platform's foundation location to ensure drivability of the piles. For details, see Attachment 26 Offshore Transmission Route Map.

- **Permitting**: [redacted]
- **Engineering**: The onshore transmission route has been completely designed and engineered with the location of HDDs and potential splice vaults determined and duct bank designed. An underground utility location survey has been completed to reinforce this onshore route design. Anbaric has also done a dewatering analysis on the onshore cable route to identify locations where dewatering is needed and in what capacity. This reflects in the price estimate and permitting requirements. Furthermore, an ampacity study confirmed feasibility of cable connection and an EMF study has been carried out. The HDD landfall concept has been engineered and initial layouts and single line diagrams have been created for the onshore converter station, POI expansion and offshore converter station. For these drawings see Attachments 19, 20, 21, 22, 23 and 24.
- **Technology**: The Project uses commercially available, fully qualified, and proven technology. For more information, refer to Section 3.1.3 and the Boardwalk Power Option 2.2 Technical Bid.
- **Schedule**: Anbaric created a detailed Project Schedule based on previous project management and scheduling experience and supplier input. See discussion in Section 8.0 for more information. This timeline is feasible from a solicitation schedule point of view and plans for significant schedule float for most critical milestones, such as transport, installation, and commissioning.
- **Procurement and supply chain**: Anbaric's procurement strategy focuses on minimizing risks. Information was requested from suppliers with a track record in offshore platform construction and HVDC systems.
- **Risk mitigation**: [redacted]

Appendix A

Schedule E to the Designated Entity Agreement Between Anbaric and PJM

Non-Standard Terms and Conditions, Schedule E to the Designated Entity Agreement

The Designated Entity commits to the following terms and conditions relevant to the Project:

a) **Cost Caps**. The Designated Entity agrees that it will not seek recovery through its Annual Transmission Revenue Requirement of any Construction Costs in excess of an amount equal to the Construction Cost Cap Amount.

b) **Return on Equity.** The Designated Entity shall be entitled to recover the FERC-approved return on equity ("ROE") on the Construction Costs, but, subject to clause (d) below, shall forego all existing or future return on equity incentives approved by FERC. *[Note to Draft: The Designated Entity commits to file for an 8.5% ROE with FERC. Because Anbaric is waiving all incentive basis point adders, the 8.5% ROE is not a base ROE but the full ROE. The ROE will be further reduced for cost overruns and schedule delays, and will be increased for cost savings, as set out in this attachment. The term of the ROE shall be for initial investment of the Construction Costs for the life of the project, and Anbaric agrees not to seek a higher ROE pursuant to its rights under Section 205 of the Federal Power Act.]*

c) **Reduction in ROE for Costs Above Project Bid Estimates.** The Designated Entity shall recover a reduced ROE of 5.75% on the Construction Costs that exceed the Indexed Bid Construction Costs, up to the Construction Cost Cap Amount.

d) **ROE Incentive to Actual Project Costs Less Than Project Bid.** If the actual Construction Costs are less than the Indexed Bid Construction Costs, the Designated Entity shall be entitled to a 50 basis point adder to the project ROE for each 10%, or portion thereof, that Construction Costs are below the Indexed Bid Construction Costs. For example, if Construction Costs are 5% below the Indexed Bid Construction Costs, the ROE will be adjusted from 8.5% to 8.75% (8.5% plus 0.50%x(5%/10%)).

e) **Capped Equity Structure**. The Designated Entity commits to an actual equity content of no greater than 45%. The Designated Entity shall be granted relief from this commitment if the capital market conditions do not remain normal and the Designated Entity does not have the ability to finance the Project with the proposed capital structure.

f) **Schedule Delays:** The Designated Entity commits to a reduction in the Project ROE if the Project does not achieve Commercial Operation by the Target Project In-Service Date, as such date may be extended for Extension Events. The reduction in Project ROE will be in accordance with the following table ("Schedule Guarantee"):

Schedule Guarantee	
Months of Delay	**Total Reduction in ROE**
0 to 6	0.0 basis points
6 to 18	2.5 basis points/month
18 months	30 basis points

The Schedule Guarantee is subject to a maximum reduction in the ROE of thirty (30) basis points. The Target Project In-Service Date is subject to extension if the Designated Entity's ability to perform the Scope of Work is delayed due to an Extension Event

g) **Liquidated Damages**: The Designated Entity commits to use commercially reasonable efforts to negotiate delay liquidated damage provisions ("Schedule LDs") with the primary contractor(s) for the Project. To the extent the Project is delayed and the Designated Entity collects Schedule LDs from its contractor(s), the Designated Entity commits to pass through the value of the Schedule LDs received by the Designated Entity.

As used herein, the following terms have the following meanings:[36]

1. "Annual Transmission Revenue Requirement" means the rate determined by the FERC following a filing by the Designated Entity under Section 205 of the Federal Power Act and FERC's rules and regulations.
2. "Bid Construction Costs" means Construction Costs as proposed by the Designated Entity forming the basis for this proposal and totaling $ 1,820,419,822.
3. "Commercial Operation" means the Project (i) has been completed in accordance with the Scope of Work in Schedules B this Agreement, (ii) meets the criteria outlined in Schedule D of this Agreement and (iii) is under Transmission Provider operational dispatch.
4. "Construction Cost Cap Amount" means Indexed Bid Construction Costs multiplied by 1.25.
5. "Construction Costs" means any and all costs and expenses directly or indirectly incurred by the Designated Entity and its affiliates to develop, construct, complete, test, start-up and commission the Project and place the Project in service in accordance with Schedule C, including without limitation any costs and expenses incurred by the Designated Entity and its affiliates in connection with the following: (i) acquiring land and land rights for the Project, (ii) performing any environmental assessments in connection with the Project, (iii) designing and engineering the Project, (iv) procuring any equipment, supplies and other materials required to complete construction of the Project and place the Project in service, (vi) otherwise performing or completing any and all development and construction-related activities required in connection with the Project, including but not limited to all permitting, licensing, site preparation and clearing, equipment assembly, installation and erection, testing and commissioning activities, whether performed directly by the Designated Entity or by one or

[36] Capitalized terms used but not defined herein have the meaning set forth in the Pro Forma Designated Entity Agreement attached to PJM's tariff.

more third parties retained by the Designated Entity (without regard to whether such third parties are affiliated or non-affiliated), but excluding in all cases Excluded Costs.

6. “Cost Overrun” means the amount by which Construction Costs exceed the Indexed Bid Construction Costs.
7. “Excluded Costs” means (i) any taxes, duties, tariffs, customs, levies, foreign exchange rate impacts, and any financing costs, including any approved return on equity, Allowance for Funds Used During Construction, or similar allowance or financing cost or charge earned or accrued in connection with the Project during the period of development and construction of the Project (or thereafter), (ii) any costs resulting from the enactment, adoption, promulgation, issuance, modification, or repeal of any statue, rule, regulation, order or other applicable law or changes in the enforcement, interpretation or application of any statue, rule, regulation, order or other applicable existing law, (iii) any costs and expenses associated with any PJM, New Jersey BPU, or siting authority directed additions to or modifications of the Scope of Work (but only if and to the extent such costs and expenses are in excess of the costs and expenses that would have been incurred but for such addition to or modification of the Scope of Work), (iv) any costs and expenses incurred as a result of a Force Majeure (but only if and to the extent such costs and expenses are in excess of the costs and expenses that would have been incurred but for such Force Majeure), (v) any costs resulting from permitting delays or injunctive action by a court, (vi) cost increases due to fluctuations in commodity cost, (vii) any costs resulting from breach, default, interference, or failure to cooperate by (A) Transmission Provider of its obligations under this Designated Entity Agreement or (B) any Transmission Owner in connection with any interconnection agreements and (viii) any request by Transmission Provider to delay or suspend any activities associated with the Project.
8. “Extension Events” means (i) any delays resulting from the enactment, adoption, promulgation, issuance, modification, or repeal of any statue, rule, regulation, order or other applicable law or changes in the enforcement, interpretation or application of any statue, rule, regulation, order or other applicable existing law, (ii) any delays associated with any PJM, New Jersey BPU, or siting authority directed additions to or modifications of the Scope of Work, (iii) any delays as a result of a Force Majeure, (v) any delays in permitting or resulting from injunctive action by a court, (iv) any delays resulting from breach, default, interference, or failure to cooperate by (A) Transmission Provider of its obligations under this Designated Entity Agreement or (B) any Transmission Owner in connection with any interconnection agreements and (v) any delays as a result of a request by Transmission Provider to delay or suspend any activities associated with the Project or delays in the Project due to a delay in the Transmission Provider completing its scope of work.
9. “Indexed Bid Construction Costs” means Bid Construction Costs adjusted for the dollar year in which construction of the Project begins. Such dollar year adjustment to be based on changes in the Handy-Whitman Index “Cost Trends of Electric Utility Construction: North Atlantic Region”, “Total Transmission Plant” from July 1, 2021 until the date full notice to proceed is given by the Designated Entity to its construction contractor(s).
10. “Scope of Work” means the approved scope of work for the Project.
11. “Target Project In-Service Date” means [________].