

Wind Energy Development & Newport Renewables
Response for Proposal to Bristol and Barrington
BID #850





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Bidder's Background

Wind Energy Development

Green Development, LLC d/b/a Wind Energy Development ("WED") is a Rhode Island based company founded in 2009. WED provides the necessary resources to develop, construct, and manage commercial scale on shore wind projects. The company works with Rhode Island communities and public entities to plan and construct renewable energy projects, delivering reliable, inexpensive, and clean power. WED plans to help Rhode Island completely transform and diversify its energy portfolio in the coming years.

WED's business differentiates itself through financial and legislative expertise, technology awareness, project management efficiency, supply chain and logistics expertise, maintenance capabilities, speed to market and transfer of knowledge to our clients. WED's model capitalizes on the ability to quickly identify and engage government agencies, public institutions and the private sectors. The goal of our upfront efforts is to guide the customer/partner to energy independence through sustainable energy options.

WED will navigate all local, state and federal regulatory agencies to include completing federal and state applications for financial assistance. Local participation is fostered throughout the established process, lending a sense of ownership to all involved and having the effect of enhancing project success.

WED has structured a team to include a full suite of partners capable of providing a turnkey renewable energy solution to the Towns of Bristol and Barrington. These include Newport Renewables; a licensed electrical contractor and renewable energy company based in Rhode Island, Power Engineers; a highly experienced engineering and design company, Fuss & O'Neill; a full-service civil and environmental engineering firm, and Vensys, AG; a global leader in Wind Turbine Technology Development & Manufacturing. This ongoing collaboration with seasoned professionals lends years of experience to the WED team, and as a group are committed to the success of the proposal to Bristol and Barrington.

a. Company Ownership

WED is a Rhode Island based Limited Liability Company. The company was founded in 2009.

NPTRE is a Rhode Island based Limited Liability Company. The company was founded in 2010.

b. Location of Company Offices

WED and NPTRE are both Rhode Island based companies. Both companies take pride in bringing and keeping business in the state, while securing green energy for the state.

WED is based out of North Kingstown, R.I., while NPTRE is based out of Providence, R.I.

c. Number of Employees

WED employs more than 30 employees, all of which are Rhode Island based. NPTRE employs 10 employees.

d. Locations Employees Assigned From

This project will be serviced from WED's North Kingstown based office and NPTRE's Providence based office.



e. Bidder's Contact Information

Michelle Carpenter, Chief Operating Officer
3760 Quaker Lane, North Kingstown, RI 02852
(781) 325-2884
mc@wedenergy.com

f. Company Qualifications

Wind Energy Development

For a copy of WED's Contractor's License see Appendix A.

WED is a fully staffed turn key renewable energy development and construction company. We lead control and manage every aspect of our projects including initial site identification, contract negotiation, permitting, surveying, site construction, project management and final commissioning. Our unique ability to comprehensively develop renewable energy projects ensures that WED's projects are executed efficiently from start to finish. WED has dedicated staff resources for all renewable energy projects proposed by WED, and maintains the flexibility to adjust schedules accordingly to meet project timelines under any circumstance.

WED will be responsible for overseeing all construction of the project. The company maintains a general contracting license and provides site construction services to real estate development throughout Rhode Island, Connecticut and Massachusetts. The company has more than 20 field employees and a fleet of heavy site construction equipment through which it provides these services. With more than two decades of experience demonstrating our ability to provide and coordinate on-call and emergency general contracting service work and repair. Services include:

CONSTRUCTION

- General Construction
- Asphalt & Concrete Paving
- Processing & Recycling Bases & Aggregates
- Excavation & Site Work
- Utility Work
- Shore & Slope Protections
- Surveying
- Wind Turbine Construction

PROJECT PLANNING

- Project Development
- Contract Document Review
- Value Engineering Design
- Conceptual Estimates
- Logic Flow Diagrams
- Subsurface Investigation



In addition to our in-house staff with renewable energy experience, WED has chosen an experienced and knowledgeable group of partners to provide the full range of services required to provide a turnkey solution to all phases of project development. These partners include Newport Renewables (“NPTRE”); and Fuss & O’Neill. This ongoing collaboration with seasoned professionals lends years of experience to the WED team. WED maintains overall responsibility for the project but relies on our partners to ensure timely and cost-effective operations, and continuously meet or exceed client expectations. The org chart below shows all internal and external resources available to WED for the implementation of these projects.

Newport Renewables

Since 2010, NPTRE has been Rhode Island’s leading provider of clean energy solutions for families, businesses and communities. As a licensed general contractor, electrical contractor, and renewable energy professional, NPTRE designs, builds and operates zero energy homes and solar photovoltaic systems with an in-house team of craftsman, electricians and renewable energy professionals. NPTRE self-performs most work on each clean energy project, allowing greater control over quality, cost and schedule, directly benefitting clients. NPTRE delivers clean energy solutions using a technology based approach, yielding more accuracy and precision than competitors. It is normal to see NPTRE crews using the latest technology to complete work, measuring with lasers, speaking in decimals and fastening with tools commonly found on precision manufacturing assembly lines. We are firm believers in spending extra time during planning and design to mitigate risk and accelerate the construction process.

Development

Sound development solutions are the foundation to a successful project. NPTRE begins each project with a thorough feasibility analysis to determine technical and financial feasibility and set client expectations. The data collected during the feasibility analysis drives the design and engineering processes.

- Feasibility Analysis
- Design + Engineering
- Permitting
- Interconnection

Build

NPTRE is a licensed general and electrical contractor, and renewable energy professional, able to provide an array of solutions for any project. Their team of builders, electricians, renewable energy professionals, project managers and construction managers are ready to deliver value, at any stage of project development.

- General Contracting
- Electrical Contracting
- Construction Management
- Project Management

Operate

NPTRE’s projects have historically exceeded performance estimates. The operations team will optimize the Town’s investment. NPTRE’s O&M team takes a proactive approach to project operations, tracking performance, detecting and diagnosing issues, and scheduling and managing on-site maintenance activities. Their projects have historically exceeded performance estimates.

- Operations + Maintenance
- Monitoring
- Warranty Administration
- Commissioning



Fuss and O'Neill

For additional information see Appendix D.

Fuss & O'Neill has designed over 45 MW of solar PV, over 15 MW of this is currently generating and over 20 MW is anticipated to be online by Fall of 2016. Fuss & O'Neill has delivered a comprehensive suite of engineering services for solar photovoltaic projects for clients ranging from developers and energy procurement contractors (EPC) to owners and end users, throughout New England.

Project types have included roof-mounted, ground-mounted "greenfield", ballast-mounted landfills and "brownfields" and canopy-mounted installations. These services often include initial project assessment, permitting, design, construction administration and witness testing. Specific services recently provided for clients have included survey, wetlands, Phase 1 ESA, Post Closure Use Permit, detailed civil design, structural design including ballast design calculations, racking design, and layout.

The electrical design for these projects usually begins with the utility interconnection application. Projects have required AC and DC detailed design, from individual modules to the interconnection point, including relay settings, short circuit coordination, arc flash, and voltage drop calculations and utility interconnection application.

Team Resumes:

Mark DePasquale, WED C.E.O. and entrepreneur, has more than three decades of diverse public and private design build and construction project experience. Utilizing his ability to provide and access the service and expertise of a wide variety of legal, finance, engineering, and construction professionals, he has developed and managed over \$100,000,000 in projects that include but are not limited to public safety complexes, education facilities, subdivisions, road and site construction, commercial sized wind turbines, and utility work. Since 2009, he has created Rhode Island's leading wind sustainable energy company that differentiates itself through legislative expertise, technology awareness, project management efficiency, supply chain and logistics expertise, operation and maintenance capabilities, speed to market, transfer of knowledge to clients and the community all with the goal of land preservation, reducing energy dependence and growing local economy.

Michelle Carpenter, WED C.O.O. has more than ten years of project development, financing and technical expertise within the renewable energy industry. At WED, she oversees the entire project development team and process for wind and solar energy projects. Most recently she ran the Northeast origination team for NextEra Energy Resources Distributed Generation Division sourcing, developing and structuring more than 70 MW of solar projects. Prior to NextEra, Michelle held various roles at Real Goods Solar supporting solar project development in excess of 30MW throughout the Northeast. Her expertise includes municipal project development and construction, financial analysis, project pricing and technical feasibility assessments. Prior to her experience in the renewable energy industry, Michelle spent five years in the estimating department of a multi-million-dollar electrical contracting firm. She has a Bachelor of Science in Environmental and Natural Resource Economics with a minor in Environmental Science from the University of Rhode Island.

Lisa Fowler, WED C.F.O. is a CPA and has over 25 years of experience in public accounting with both national and regional firms. She has spent most her career working with closely held businesses in manufacturing, construction



and real estate development. She has been involved in the financing of many different types of projects utilizing varied and diverse funding sources. Her expertise extends to structuring tax deals, including tax equity partnerships, and has been sought out to do extensive tax legislative research for Congress and helping to write tax legislation for the state of Rhode Island. Lisa is a member of the AICPA and serves on various committees for the RISCPA. She is often an invited guest speaker at professional organization where she addresses a wide range of tax-related topics. She is a graduate of Bryant University where she earned a BS degree in Business Administration with concentration in Accounting.

Hannah Morini, WED Project Developer is a renewable energy industry professional with both private and public sector experience gained over the past six years. Hannah recently joined WED after three and a half years as the Renewable Energy Program Manager at the Rhode Island Commerce Corporation. In this role, Hannah created, implemented, and administered all clean energy finance programs at Commerce RI. Prior to Commerce RI she worked as an Operations Manager, Project Developer and Sales Associate in the wind division of Alteris Renewables, a predecessor to RGS Energy. She also has experience in solar operations management, event planning, research, and energy policy. Hannah holds two Bachelor of Science degrees from the University of Rhode Island in Environmental Science and Resource Management and Coastal and Marine Policy.

Paul Correia, WED General Superintendent, has more than 20 years of field experience. During his career, he has managed and overseen all phases of a construction project from initial planning to completion. Paul specializes in public works projects, residential work, commercial and private projects. Several of these projects took place in RI and MA. Through his commitment to excellence and dedication, Paul has continued to form strong professional partnerships based on integrity, and reliability. All these characteristics have made Paul become one of the most respected names in the field.

Shawn Martin, Fuss & O'Neill PE, CNU-A Vice President leads Fuss & O'Neill's civil engineering and urban redevelopment projects in eastern Massachusetts and Rhode Island. His diverse project experience in land development includes surveying, land planning, environmental site assessments, stormwater management, water distribution, and wastewater collection and treatment systems. He is expert at the application of low-impact development strategies for a broad range of project types, including Brownfields sites with complex environmental conditions. Shawn has designed and managed residential, institutional, commercial and industrial developments with RIDEM and CRMC permitting requirements. He also has a long history of providing on-call services to many municipalities in Rhode Island.

Representative Projects

- 2 MW Parking Canopy Array, Bristol Community College, Fall River, MA
- Ground-mounted Solar Array Peer Reviews, Carver, Rehoboth, Taunton
- 1MW PV Array, Cherry Valley, Leicester, MA
- 1 MW PV Array, JH Cluster, North Brookfield, MA
- 1MW Array, Ledoux Cluster, North Brookfield, MA
- 2.5MW Array, Dudley River, Southbridge, MA
- 115 kV Substation, Belmont, MA
- Belvidere at Bristol, Bristol, RI
- RI Veteran's Home Master Plan, Bristol, RI



- Robin Rug Master Plan, Bristol, RI

Dean Audet, Fuss & O'Neill PE leads our corporate Water Environment & Natural Resources Practice Team. Through his career, he has completed a wide range of civil and environmental engineering projects, working with multiple technical disciplines. These projects have included stormwater management, watershed management, wastewater, solid waste, site remediation, environmental compliance, and land development. Dean's principal strength has been managing large and complex multi-disciplinary projects, where his range of technical experience becomes very valuable.

Representative Projects

- Support, RIDEM, Central Landfill, RI
- Closure Plan and Design of Geomembrane Cap, Woonsocket Landfill, RI
- Landfill Investigation and Development of Closure Plan, West Warwick Landfill, RI
- Landfill Investigation and Development of Closure Plan, East Greenwich Landfill, RI
- Investigation of Environmental Impacts and Development of Closure Plan, Jamiels Park Landfill, RI
- Disruption Plan for Excavation and Removal of Solid Waste, Waste Management Inc., CT
- Environmental Investigation and Closure Plan, Pawtucket Landfill, RI
- Closure and Operations Management Plan, Bristol Landfill, CT
- Closure Plan, Enfield Landfill, CT
- Design and Permitting for Proposed Bulky Waste Landfill, Hartford, CT

Kevin Sullivan, Fuss & O'Neill PE, LEED AP is a Project Manager at Fuss & O'Neill, throughout his career he has managed a wide variety of successful multi-discipline projects. He has been responsible for a comprehensive suite of engineering services for solar PV developers that include permitting, design and construction administration. Specifics have included: Phase 1 ESA, Post Closure Use Permit, detailed civil design, structural design including ballast design calculations, racking design and layout. Electrical design included AC and DC detailed design from the individual modules to the interconnection point, including relay settings, short circuit coordination, arc flash and voltage drop calculations and utility interconnection application. Kevin has a strong interest and special expertise in energy conservation and the application of alternative energy systems for variety of projects.

Representative Landfill Projects

Sullivan's Ledge, New Bedford, MA MIRA Hartford Landfill, Hartford, CT Pittsfield, MA Mansfield, MA North Providence, RI

Christopher Cullen, Fuss & O'Neill PE has 30 years of experience as an engineer and manager of geotechnical engineering projects. Projects include subsurface investigations, analyses, and recommendations for deep and shallow foundation design, earth retaining structures, slope stability studies, seepage analyses, dam design and repair, and forensic studies.

Chris has performed geotechnical studies for commercial facilities, industrial facilities, institutional facilities, and infrastructure including bridges, water towers, and cellular towers in New England and the Southeastern United States.

Representative Projects

- Geotechnical Studies for Foundation Supports of Solar Power Canopies, Multiple Locations, Massachusetts, Connecticut, RI
- Landfill Design and Construction, Sanco Landfill, Bethlehem, NH
- Geotechnical Study For settlement and stability of the Peterborough Municipal Landfill.
- Masonry Tower Stabilization, Coventry, RI
- Geotechnical Engineering for Herring River Restoration, Wellfleet, MA
- Geotechnical Engineering for Eagle Neck Tidal Restoration Project, Truro, MA
- Geotechnical Engineering for Muddy Creek-Pleasant Bay Culvert Replacement, Chatham and Harwich, MA
- Geotechnical Engineering for Pedestrian/Bicycle Path Stability, Burlington, VT
- Geotechnical Engineering for Pedestrian Bridge and Retaining Wall, Northborough, MA

g. Length of Time Bidder Has Been Providing Services

WED and predecessor entities have been in the site construction industry for more than 20 years providing a wide range of general contracting, site construction and project management services. WED has been developing and constructing renewable energy projects since 2009. In addition, members of its management team have been involved in the solar energy industry and participated in the financing and tax equity markets for more for more than a decade. WED’s installation partner NPTRE has been providing solar energy services since 2010. With WED’s background in successfully navigating the permitting, interconnection and development of renewable energy projects in Rhode Island coupled with NPTRE experience building solar for municipal and educational customers provides the expertise required for developing and constructing these projects for Bristol and Barrington. These two companies will result in a well-rounded and highly experienced partnership.

h. Rhode Island Solar & Municipal Experience

WED has been in the renewable energy business since 2009. Through WED’s years in the industry it has been extremely successful in the development of wind turbines throughout the state. NPTRE has been developing and constructing solar projects since 2010. A sampling of the team’s projects are as follows:

Table I. Combined Renewable Energy Experience

Project	Town	Project Owner	Contract Type	System Size	Technology	Date Installed	Project Developer
WED Coventry One	Coventry	Narragansett Bay Commission	Direct Purchase	1.5MW	Wind	2016	WED
WED Coventry Two	Coventry	West Warwick	Direct Purchase	1.5MW	Wind	2016	WED
WED Coventry Three	Coventry	Narragansett Bay Commission	Direct Purchase	1.5MW	Wind	2016	WED
WED Coventry Four	Coventry	Narragansett Bay Commission	Direct Purchase	1.5MW	Wind	2016	WED
WED Portsmouth	Portsmouth	Portsmouth	Direct Purchase	1.5MW	Wind	2016	WED
WED NK Green	North Kingstown	WED	DG Program	1.5 MW	Wind	2012	WED



WED Coventry Five	Coventry	WED	REG Program	1.5 MW	Wind	2016	WED
WED Coventry Six	Coventry	WED	REG Program	4.5 MW	Wind	2016	WED
Rocky Hill School	East Greenwich	Rocky Hill School	DG Program	33 kW	Solar	2014	NPTRE
257 Thayer Street	Providence	Gilbane Development Company	DG Program	67.2 kW	Solar	2014	NPTRE
Quest Montessori	Narragansett	Quest Montessori School	DG Program	49.84 kW	Solar	2015	NPTRE
Lincoln School	Providence	Lincoln School	DG Program	49.84 kW	Solar	2015	NPTRE
St. Michael's School	Newport	St. Michael's School	DG Program	10.26 kW	Solar	2015	NPTRE
Bay View Academy	Riverside	St. Mary's Academy- Bay View	DG Program	49.28 kW	Solar	2015	NPTRE
Mount Carmel	Bristol	Mount Carmel School	DG Program	45.6 kW	Solar	2015	NPTRE
Natco	West Warwick	Onyx Construction Group	DG Program	520 kW	Solar	2016	NPTRE
Cranston High School- West	Cranston	City of Cranston	DG Program	51.3 kW	Solar	2016	NPTRE

i. Other Requirements

WED does not have any alleged significant prior or ongoing contract failures, any civil or criminal litigation or investigation pending which involves WED or in which WED has been judged guilty or liable.

NPTRE does not have any alleged significant prior or ongoing contract failures, any civil or criminal litigation or investigation pending which involves WED or in which WED has been judged guilty or liable.

WED acknowledges that we have received copies of all addenda.

Please See Appendix B for copies of all mandatory signature pages and addenda.

3. References:

1: Cranston High School West

Project Description: In August/September 2016, NPTRE completed the installation of a 51.3 kW DC roof mounted solar PV system for the City of Cranston at Cranston High School West, located at 80 metropolitan Ave, Cranston, RI. NPTRE secured nearly 100% of the funding for the project through two grants from the Office of Energy Resources, and the Commerce RI Renewable Energy Fund. The 180 panel ballasted array was designed by NPTRE and installed on a new roof membrane atop the B-wing of the school. The project required close coordination between NPTRE, the City of Cranston, the Cranston School Department and the roofing contractor. The solar array provides a percentage of the school's annual electric load through a net-metering agreement with National Grid. The majority of the installation of the system was self-performed by NPTRE, with the exception of hoisting and rigging, which was performed by Cranston, RI based Imperatore Steel Erectors, Inc. The system has a life expectancy of at least 25 years.

Project Dates:

8/15/16 – 9/15/16, Interconnected
October 2016

Client Contact Information:

Kenneth Filarski: City of Cranston Grant
Consultant – (401) 331-8800



2: Natco Products Corporation

Project Description: From April-July 2016 NPTRE completed the installation of a 521.5 kW DC roof mounted solar PV system for Natco Products Corporation, located at 155 Brookside Ave, West Warwick, RI. The solar array was installed on the standing seam metal roofs of two warehouse buildings, using non-penetrating attachment hardware. The solar array produces roughly 50% of the facility's annual electricity through a net-metering agreement with National Grid. The installation of the solar array was self-performed by NPTRE.

Dates: 4/27/2016 – 7/26/2016, Interconnected November 2016

Client Contact Information:

Dave Howard, Natco Products Corporation – (774) 218-6280



3: GD Amenity & Leasing, LLC (Gilbane Development) – 257 Thayer Street Housing

Project Description: This project was installed on a new multi-unit residential housing building located on Thayer Street in Providence, RI, developed by Gilbane Development. The scope of work included the design, grant application, permitting, installation and interconnection of a 67.2 kW DC ballasted, net-metered system using string inverters. NPTRE was successful in obtaining 100% of the grant award for its client. The system was installed on the new roof of the four story building. The Carlisle roof system required the use of specific Carlisle approved slip sheets, which were utilized by NPTRE. The system was inspected and approved by Carlisle Roofing's warranty inspector. The system offsets 15% of the building's annual energy consumption, which offsets the consumption of the majority of the common loads of the building.

Project Dates: 4/21/2015 – 6/21/2015, Interconnected August 2015

Client Contact Information

Andrew Bourne, Gilbane Development – (401) 456-5537

4: United States Fish and Wildlife Service – Dept. of the Interior

Project Description: This project was an addition to an existing net-metered solar array at the visitor center at the Sachuest Point National Wildlife Refuge, a federally owned and operated wildlife refuge in Middletown, RI. The scope of work included the design, permitting, installation and interconnection of a 20.24 kW DC ground mounted system, utilizing both string inverters and microinverters. NPTRE added on to an existing solar array, and integrated it into the new solar array. The federal agency elected to only pursue a net-metering agreement with the utility, and therefore did not request us to apply for any additional incentives. The entire project, including site work, was performed in-house by NPTRE.



Project Dates: 7/22/2015 – 9/1/2015, Interconnected October 2015

Client Contact Information

John Laauwe, Plant Operations (401) 440-5593

5: Lincoln School

Project: Lincoln School - Providence, RI

Client: Lincoln School

Contact: Lenny Estrella - Lincoln School

Contact Phone: (401) 331-9696 - Main Office

Size: 49.84 kW DC



6: St. Mary Academy Bay View

Project: St. Mary Academy Bay View - Riverside, RI

Client: St. Mary Academy

Contact: Peter Costa - St. Mary Academy

Contact Phone: (401) 434-0113 ext. 122 - Office

Size: 49.28 kW DC

7: Belcourt of Newport/ Alex and Ani

Client: Belcourt of Newport / Alex and Ani

Contact: Shahin Barzin - S. Barzin Architect

Contact Phone: (401) 965-8756 - Cell

Size: 18.72 kW DC

WED has developed and constructed 10.5MW of renewable energy projects for municipal customers in Rhode Island which include the following projects. These projects are even more complex than the solar energy project we have proposed for Bristol and Barrington.

8: WED Coventry One, LLC

Client: Narragansett Bay Commission

Contact: Barry Wenskowicz – Pollution Prevention Engineer

Contact Phone: (401) 443-4968

Size: 1.5 MW wind turbine

9: WED Coventry Two, LLC

Client: Town of West Warwick

Contact: Fred Presley – Town Manager

Contact Phone: (401) 822-9219

Size: 4.5 MW (3) 1.5 MW wind turbines

10: WED Coventry Three, LLC

Client: Narragansett Bay Commission

Contact: Barry Wenskowicz – Pollution Prevention Engineer

Contact Phone: (401) 443-4968

Size: 1.5 MW wind turbine

11: WED Coventry Four, LLC

Client: Narragansett Bay Commission

Contact: Barry Wenskowicz – Pollution Prevention Engineer

Contact Phone: (401) 443-4968

Size: 1.5 MW wind turbine



12: WED Portsmouth One, LLC

Client: Town of Portsmouth

Contact: Rich Rainer – Town Administrator

Contact Phone: (401) 683-3255

Size: 1.5 MW wind turbine

4. Renewable Energy Solution

a. Project Overview

WED has developed a 4.4 MW DC (3.0 MW AC) proposed solar energy system design for the Town of Bristol on their landfill and the option of an additional 1.5MW wind turbine. WED would propose to net meter the landfill solar project and provide up to 100% of the power required by the Town of Bristol and to bid the wind turbine project into the REG program. WED has a 100% track record of success in securing REG contracts for all the projects we have developed to date in Rhode Island. In addition, we would propose to provide up to 100% of the power required by the Town of Barrington through one or more virtually net metered projects and, if desired, although the economics are not as favorable through 1-2 smaller roof mounted systems in Barrington. Layouts for the proposed roof mounted systems at the Primrose Hill and Nayatt Schools have been provided in Appendix C.

The solar array we have proposed for the Bristol landfill will utilize a ballasted racking system which will not require penetrating the landfill cap. Similarly, ballasted systems are proposed for both Barrington school sites. These systems will rest on top of the roof, without compromising the roof structure with penetrations. A ballasted system is a reliable and efficient foundation system when more traditional foundations are not feasible.

Table II. Proposed Solar Energy Systems Overview

	Landfill Project	Primrose Hill School	Nayatt School
System Size	4,443.1 KW (DC)	178.1 KW (DC)	150.7 KW (DC)
Estimated 1st year kWh	5,761,087	218,176	184,610
Mounting Method	Ballasted Ground Mount	Ballasted Roof Mount	Ballasted Roof Mount
Orientation & Tilt Angle	180 Azimuth 25 Degree	174 Azimuth 10 Degree	176 Azimuth 10 Degree
Proposed Panel	Trina PD14 320W (or equivalent)	Trina PD14 320W (or equivalent)	Trina PD14 320W (or equivalent)
Proposed Inverter	Solectria XTM-500 (or equivalent)	Solectria PVI-60TL (or equivalent)	Solectria PVI-50TL (or equivalent)
Proposed Racking	RBI Solar	RBI Solar	RBI Solar

In addition to the solar energy system on the capped landfill WED would propose to enter into a land lease with the Town to lease a portion of the land to the Southeast of the landfill to locate a wind turbine. WED proposes to use the Vensys 1.5MW V82 wind turbine on an 85-meter tower. Upon completion of construction the wind turbine would only occupy 800 square feet above ground, and slightly more below grade with the foundation. The turbine manufacturer we have chosen is Vensys. This is the same technology utilized for all of our turbines in Coventry, the Narragansett Bay Commission campus and Portsmouth. We replaced the prior gearbox driven machine in Portsmouth that had failed, and replaced it with the Vensys Technology. They manufacture thier own nacelles,

generators, converter systems and electrical switchgear systems in Germany. The technology does not rely on a gearbox which is the single highest point of failure in other wind turbines.

Table III. Proposed Wind Turbine Overview

Model	Vensys V82 1500
Tower Height	85 Meters
Turbine Lease Area	¼ acre
Blade Diameter	82 Meters
System Size	1,500 KW
Estimated 1st year kWh	3,600,000
Foundation Type	Spread Footing

b. Proposed Equipment

Please see Appendix D for Equipment specification sheets.

Panels:

Trina Solar is a well-respected manufacturer of solar panels worldwide. Trina panels go through 30 in-house tests for quality control, and come with a 25 year performance guarantee. As a testament to the quality and reliability of their panels, Trina has shipped 17,000 MW of solar panels over the last ten years. The Trina PD14, a 72 cell high output module, has been selected for this project.

Inverters:

Yaskawa – Solectria Solar is the top ranked commercial PV inverter supplier in the United States, headquartered in Lawrence, MA. Their inverters are designed to provide customers with reliability and efficiency for large scale solar arrays, with up to a 20 year warranty available. These inverters are designed with redundant power stages, allowing the array to operate with a power stage down. The SGI 500 XTM has been selected for this project

Racking System

RBI Solar, Inc. is a leading international solar racking manufacturer, with decades of experience in design-build projects. RBI has an in-house engineers and designers licensed in all 50 states, and in-house manufacturing to ensure a high quality and durable racking system that is backed by a 20 year limited guarantee. A ground mounted, ballasted racking system will be utilized for the solar array atop the landfill. This system will protect the integrity of the landfill, while providing the structural support necessary to ensure a long-lasting system.

Product Description:

The VENSYS wind turbines stand out due to the following unique characteristics:



Direct Drive

VENSYS relies on direct drive technology. The rotating speed of the rotor is transferred directly to the multi-polar generator, dispensing with the need for a high-maintenance gear unit that is susceptible to wear.



Permanent Magnet Technology

Permanent magnets are fixed to the rotating part of the generator. Excitation power thus saved is fully available as additional energy yield.



Full Power Converter System

VENSYS [converter systems](#) feature power plant properties and comply with the requirements and regulations of various grid operators in all parts of the world.



VENSYS Pitch System

VENSYS uses patented blade pitch systems with triple redundancy. One special feature is the proven toothed belt drive which is lubrication-free and minimizes maintenance.



Air Cooling

VENSYS cooling systems are convincingly simple and robust at the same time – either as a passive external air cooling system or as a closed system with a heat exchanger.

5. Financial Offer

As part of our offer, WED has developed a PPA offering and lease solution that allow the Towns to receive the benefits of renewable energy with zero upfront investment. We would propose to offer the Town of Bristol up to 100% of their electricity from a solar energy system installed on the landfill. The solar electricity would be provided through Net Metering Credits (“NMC”). WED would propose to sell these NMC at a rate equal to 70% of their value, with a floor of \$0.10/kWh. Additionally, we would propose to lease a small portion of land to the southeast of the landfill and install a wind turbine that will participate in the Renewable Energy Growth (“REG”) Program. In addition to utility cost savings for Bristol from the solar system, the wind turbine will generate additional revenue of \$54,000/year for the Town.

Table IV. Bristol PPA Savings & Lease Revenue

	PPA	Wind Turbine Lease
Term (years):	25	25
NMC Rate*	\$0.1567	-
PPA Payment:	70% of NMC Rate	-
PPA Savings to Town	30% of NMC Rate	-
1st Year Savings/Revenue:	\$212,841	\$54,000
25 Year Savings/Revenue:	\$8,175,000	\$1,480,000
Buyout Options:	Attractive buyouts available in years 6, 10 and 15	-

*Please see Table VI. Rate Comparison for a breakdown of the assumption around the net metering credit rate.

Assumptions:

- Interconnection costs were assumed based on the feasibility study provided by the Town of Bristol.
- The structural stability of the landfill must be studied to verify it is capable of carrying the weight of the proposed ballast blocks.
- The existing fence will be utilized along the North, East and West of the landfill.
- Prevailing Wages were included for work performed on the landfill and schools but not 3rd party provided sites.
- The Town of Bristol will enter into an agreement with WED to waive taxes and lease payments on the portion of power provided to Barrington in exchange for a lower PPA rate.
- To the extent the system size is reduced the balance of power can be provided by another project of WEDs choosing.
- Utility Cost Escalation of 4.0% per year.
- A floor of \$0.10/kWh is included on the PPA rate.

For the Town of Barrington, we plan to offset up to 100% of the Town’s electricity expenses through a combination of 1-2 onsite net-metered projects and the balance through Bristol and another offsite virtually net-metered project. The solar electricity would be provided through NMC. WED would propose to sell these NMC at a rate equal to 70% of their value, with a floor of \$0.10/kWh.

Table V. Barrington PPA Savings

Term (years):	25
NMC Rate*	\$0.1567
PPA Payment:	70% of NMC Rate
PPA Savings to Town	30% of NMC
1st Year Savings/Revenue:	\$177,790
25 Year Savings/Revenue:	\$6,829,000
Buyout Options:	Attractive buyouts available in years 6, 10 and 15

*Please see Table VI. Comparison for a breakdown of the assumption around the net metering credit rate.

Assumptions:

- Interconnection costs were assumed based on the feasibility study provided by the Town of Bristol.
- The structural stability of the landfill must be studied to verify it is capable of carrying the weight of the proposed ballast blocks.
- The existing fence will be utilized along the North, East and West of the landfill.
- Prevailing Wages were included for work performed on the landfill and schools but not 3rd party provided sites.
- The Town of Bristol will enter into an agreement with WED to waive taxes and lease payments on the portion of power provided to Barrington in exchange for a lower PPA rate.
- To the extent Barrington is interested in procuring more power than is available from the landfill project the balance of power can be provided by another project of WEDs choosing.
- Utility Cost Escalation of 4.0% per year.
- A floor of \$0.10/kWh is included on the PPA rate.

a. Virtual Net Metering:

The cost savings analysis provided above assumed that these projects were receiving the additional financial benefit of virtual net metering versus traditional net metering due to the way credits are calculated for virtually net metered projects. The rate classification that a “virtual” meter, such as will be installed at the Bristol Landfill site or other WED 3rd party owned site will receive service under a Small Commercial C-06 rate. Since the Small Commercial rate is a non-demand rate, it has a much higher per kilowatt hour rate. To put this in perspective if the town chooses to install a system behind the meter the utility rate would be lower. For example, if the Towns are paying for power at the Large Demand G-32 rate, this results in a \$0.028/kWh difference as outlined below.

Table VI. Rate Comparison in Cents per kWh

Rate Analysis	C-06	G-32
Distribution Charge	3.855	0.759
Transmission Charge	2.566	0.93
Transition Charge/(Credit)	-0.058	-0.201
Renewable Energy Distribution Charge*	-	0.232
Energy Efficiency Programs*	-	0.983
Renewable Energy Standard Charge*	-	0.03
2 Year Trailing Average Supply Charge**	9.308	10.152
Total	15.671	12.885

* National Grid does not currently credit virtual net metered customers for these items so they have been excluded from our rate comparison.

**The 2 year trailing average supply rate was used for savings analysis purposes.

Virtual Net Metering Potential Sites:

WED has several offsite renewable energy projects currently in development and available for virtual net-metering that could provide the balance of power required by Barrington. Below is a partial list of of these projects along with some information regarding their status.

Table VII. Potential Virtually Net Metered Sites

Site	System Size	Technology	Site Control	Wetlands/ RIDEM Permits	Interconnection	Local Permitting
WED Richmond Solar One	3.0 MW DC	Solar	Yes	Complete	Viable, in impact study	In process
WED West Warwick One	1.5 MW DC	Wind	Yes	Complete	Viable, ISA in hand	In process
WED North Smithfield One	1.5 MW DC	Wind	Yes	Complete	Viable, ISA in hand	In process
WED Coventry Seven	11.5 MW DC	Solar	Yes	In Process	Viable, in impact study	In process
WED West Greenwich One	1.5 MW DC	Wind	Yes	In Process	Viable, in impact study	In process
WED West Greenwich Two	3.90 MW DC	Solar	Yes	N/A	Viable, in impact study	In process
WED Richmond Solar Two	5.5 MW DC	Solar	Yes	In Process	Appears Viable, submitting for interconnection	In process



b. Bristol Savings Analysis

Table VIII.

Year	Assumed Production	PPA Rate	Utility Rate (4.0% esc.)	Lease Payment	Utility Savings	Annual Savings/Revenue	Cumulative Savings
1	4,527,271	\$0.110	\$0.157	\$ 54,000	\$212,841	\$266,841	\$266,841
2	4,513,689	\$0.110	\$0.157	\$ 54,000	\$212,595	\$266,595	\$533,435
3	4,500,148	\$0.114	\$0.163	\$ 54,000	\$220,057	\$274,057	\$807,493
4	4,486,648	\$0.118	\$0.169	\$ 54,000	\$227,473	\$281,473	\$1,088,966
5	4,473,188	\$0.123	\$0.176	\$ 54,000	\$236,184	\$290,184	\$1,379,150
6	4,459,768	\$0.128	\$0.183	\$ 54,000	\$244,841	\$298,841	\$1,677,991
7	4,446,389	\$0.134	\$0.191	\$ 56,700	\$254,778	\$311,478	\$1,989,469
8	4,433,050	\$0.139	\$0.198	\$ 56,700	\$263,323	\$320,023	\$2,309,492
9	4,419,751	\$0.144	\$0.206	\$ 56,700	\$273,141	\$329,841	\$2,639,333
10	4,406,491	\$0.150	\$0.214	\$ 56,700	\$282,897	\$339,597	\$2,978,930
11	4,393,272	\$0.156	\$0.223	\$ 56,700	\$293,910	\$350,610	\$3,329,540
12	4,380,092	\$0.162	\$0.232	\$ 59,535	\$304,854	\$364,389	\$3,693,929
13	4,366,952	\$0.169	\$0.241	\$ 59,535	\$315,731	\$375,266	\$4,069,195
14	4,353,851	\$0.176	\$0.251	\$ 59,535	\$327,845	\$387,380	\$4,456,575
15	4,340,789	\$0.183	\$0.261	\$ 59,535	\$339,884	\$399,419	\$4,855,993
16	4,327,767	\$0.190	\$0.271	\$ 59,535	\$351,847	\$411,382	\$5,267,376
17	4,314,784	\$0.197	\$0.282	\$ 62,512	\$365,031	\$427,542	\$5,694,918
18	4,301,839	\$0.205	\$0.293	\$ 62,512	\$378,132	\$440,643	\$6,135,562
19	4,288,934	\$0.214	\$0.305	\$ 62,512	\$392,437	\$454,949	\$6,590,511
20	4,276,067	\$0.222	\$0.317	\$ 62,512	\$406,654	\$469,166	\$7,059,677
21	4,263,239	\$0.231	\$0.330	\$ 62,512	\$422,061	\$484,572	\$7,544,249
22	4,250,449	\$0.240	\$0.343	\$ 65,637	\$437,371	\$503,009	\$8,047,258
23	4,237,698	\$0.250	\$0.357	\$ 65,637	\$453,857	\$519,495	\$8,566,752
24	4,224,985	\$0.260	\$0.371	\$ 65,637	\$470,241	\$535,878	\$9,102,631
25	4,212,310	\$0.270	\$0.386	\$ 65,637	\$487,785	\$553,423	\$9,656,053

c. Barrington Savings Analysis

Table IX.

Year	Assumed Production	PPA Rate	Utility Rate (4.0% esc.)	Utility Savings	Cumulative Savings
1	3,781,724	\$0.110	\$0.157	\$177,790	\$177,790
2	3,770,379	\$0.110	\$0.157	\$177,585	\$355,375
3	3,759,068	\$0.114	\$0.163	\$183,818	\$539,193
4	3,747,790	\$0.118	\$0.169	\$190,013	\$729,206
5	3,736,547	\$0.123	\$0.176	\$197,290	\$926,496
6	3,725,337	\$0.128	\$0.183	\$204,521	\$1,131,017
7	3,714,161	\$0.134	\$0.191	\$212,821	\$1,343,839
8	3,703,019	\$0.139	\$0.198	\$219,959	\$1,563,798
9	3,691,910	\$0.144	\$0.206	\$228,160	\$1,791,958
10	3,680,834	\$0.150	\$0.214	\$236,310	\$2,028,268
11	3,669,792	\$0.156	\$0.223	\$245,509	\$2,273,777
12	3,658,782	\$0.162	\$0.232	\$254,651	\$2,528,428
13	3,647,806	\$0.169	\$0.241	\$263,736	\$2,792,164
14	3,636,863	\$0.176	\$0.251	\$273,856	\$3,066,020
15	3,625,952	\$0.183	\$0.261	\$283,912	\$3,349,932
16	3,615,074	\$0.190	\$0.271	\$293,906	\$3,643,838
17	3,604,229	\$0.197	\$0.282	\$304,918	\$3,948,755
18	3,593,416	\$0.205	\$0.293	\$315,861	\$4,264,617
19	3,582,636	\$0.214	\$0.305	\$327,811	\$4,592,428
20	3,571,888	\$0.222	\$0.317	\$339,687	\$4,932,114
21	3,561,172	\$0.231	\$0.330	\$352,556	\$5,284,670
22	3,550,489	\$0.240	\$0.343	\$365,345	\$5,650,016
23	3,539,837	\$0.250	\$0.357	\$379,117	\$6,029,132
24	3,529,218	\$0.260	\$0.371	\$392,802	\$6,421,934
25	3,518,630	\$0.270	\$0.386	\$407,457	\$6,829,392