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Martha's Vineyard Commission

DRI 660 - O.B. Water District Solar Array

MVC Staff Report – 2016-09-01

Note: New information is printed in bold type.

1. DESCRIPTION

- 1.1 Applicant:** BWC Wankinco River LLC (a wholly owned subsidiary of BlueWave Capital LLC)
- 1.2 Project Location:** 4 Alwardt Way, Oak Bluffs Map 54 Lot 1 (45.5 acres) and Lot 2 (10.75 acres). The 56.25 acre properties are owned by the Oak Bluffs Water District.
- 1.3 Proposal:** The revised proposal is to construct a 1.46 +/- MW Solar Farm within a cleared area of 10.37 acres between Well # 3 and Well # 4 on O.B. Water District property containing wells 3, 4, & 5. The solar panels would be in the Zone 2 Area of Contribution with some clearing in two Zone 1 Areas of Contribution.
- 1.4 Zoning:** R-3; Residential. The Town of Oak Bluffs recently adopted a Zoning By-Law for Solar Energy Systems (Section 12). The purpose of the By-Law is to “promote the use of solar energy by providing standards for the placement, design, construction, operation, monitoring, modification and removal of such installations that address public safety, minimize impacts on scenic, natural and historic resources and provide adequate financial assurance for the eventual decommissioning of such installations”.
- 1.5 Permits:** Special Permit from ZBA under new by-law; Building Permit; Site Plan Review. Massachusetts DEP has granted approval with conditions on the revised proposal. NHESP has signed off that this would not be a “take” of state listed rare species. **The land appears to be mapped by MassGIS as Article 97 Land which would require it to go through the Disposition process of the Office Energy and Environmental Affairs (EEA).**
- 1.6 Surrounding Land Uses:** State Forest; Residential; abuts Light Industrial in Goodale Gravel Pit.
- 1.7 Project History:** The District has a total of five wells and four pumping stations.
- According to their website the Oak Bluffs Water District is a non-profit, locally controlled public water system. The District was created by Massachusetts legislature in 1991 to operate as a self-supporting unit of local government. Rates are set by the Water Commissioners to cover the cost of delivering a product which meets federal and state guidelines under the Safe Drinking Water Act. Policy is also set by the Water District Commissioners.
 - Three of the five wells in Oak Bluffs are located on this property including Wells 3, 4, and 5.
 - Water is tested and treated at the pump stations where Fluoride is added, Iron and Manganese are sequestered, chemical treatments are performed to reduce the levels of lead and copper and PH and Alkalinity are adjusted to be less corrosive to plumbing.
 - The Massachusetts DEP issued a boil water order for Oak Bluffs Water District users in 2009 and 2013 due to bacterial contamination.
- 1.8 Project Summary:**
- To construct a 1.46 +/- MW Solar Farm within a cleared area of 10.37 acres on O.B. Water District Property containing wells 3, 4, & 5 in the Lagoon Pond Watershed.
 - The Applicant was chosen by the Water District through an RFP. **The output from the solar panels should be sufficient to cover the O.B. Water District electricity needs which will result in an approximately 30-40% savings in their annual electricity bill (currently approximately \$100,000) over 20 years.**

- **Installation will be on a racking system elevated 3 to 7.5 feet utilizing posts.**
- The proposal includes 10.37 acres of forest clearing in Zone 1 and Zone 2 Areas of Contribution and construction of a Solar Energy System (SES) in the Zone 2 Area of Contribution between Well #3 and Well #4. **The area to be cleared in the Zone 2 will be stumped, graded and seeded with a “Solar Farm Seed Mix”. The area to be cleared in Zone 1 will be cut only and not stumped. A vegetative screening plan to be planted in the woods near the edge of the bike path and subdivision access road has been submitted.**
- The Massachusetts Department of Environmental Protection (DEP) approved the revised proposal **with the following conditions: There will be no installation of panels within the Zone 1; any surface runoff must be directed away from the wells; installation must not interfere with access to the water system; the District must work out a notification system to be aware at least 48 hours before any maintenance or other work done by contractors; provide emergency contact information to all contractors; fertilizers, herbicides and other pesticides are prohibited; Equipment and vehicles are to be refueled, maintained and cleaned off-site; all conditions in the Certification Form signed February 11, 2016 are in effect; change in scope or operation requires notification of DEP Drinking Water Program.**
- The Zone 1 Area of Contribution is a 400 foot buffer around a well of a certain capacity that is supposed to either be owned by the Water District or have a Conservation Restriction on it. The Zone 2 is an area of an aquifer that contributes water to a well.
- **The Applicant has submitted an Operation & Maintenance Plan and an Abandonment and Decommission plan.**

2. ADMINISTRATIVE SUMMARY

- 2.1 DRI Referral:** Oak Bluffs Building Inspector
- 2.2 DRI Trigger:** 9.3 Solar Farm over 50,000 sf (Concurrence Review). MVC voted that a Public Hearing Review as a DRI was necessary on February 4, 2016.
- 2.3 LUPC:** January 25, 2016. August 15, 2016.
- 2.4 Site Visit:** August 25, 2016 at 5:45 pm.
- 2.5 Public Hearing:** The MVC voted on February 4, 2016 that the original proposal required a public hearing review. A public hearing has been scheduled for September 1, 2016.

3. PLANNING CONCERNS

3.1 Some Key Issues

- The Property contains three public water wells and the Zone 1 and Zone II Areas of Contribution which are intended for public drinking water resource protection. The solar array is proposed in the Zone 2 area between Well # 3 and Well #4. The DEP has allowed clearing, stumping, re-grading, and installation of solar panels in the Zone 2 Area of Contribution and cutting trees to stumps, but no soil disturbance, in the outer 100 feet of the Zone 1 Area of Contribution of Well # 3 and # 4.
 - How can these operations occur without risking contamination of the water resource?
 - What are these “Areas of Contribution” established for in the first place?
- Does deforesting an old growth forest that is a designated water resource protection area and fragmenting habitat constitute an environmentally sound proposal?
- These wells in the Oak Bluffs water system are interconnected with the Edgartown water system. The property abuts the State Forest in Edgartown; the Groundwater Protection DCPC District in Tisbury; and the Greenlands Water Resource Protection DCPC District in West Tisbury. The property is designated as NHESP Habitat. Is this an appropriate place to deforest 10 acres of woods to install solar panels? Are there no alternative locations for this type and size of use?

- **Massachusetts Historical Commission has written (August 16, 2016) that: "... Undisturbed portions of the project impact area are archaeologically sensitive" and request that an intensive (locational) archaeological survey be conducted for the archaeologically sensitive portions of the project.**
- **The DEP approved a scaled down version of the original proposal with conditions. They note in their letter their review was strictly limited to M.G.L. Chapters 40 and 111 and 310 CMR 22.00. They state that the Applicant is "advised to consult your legal counsel to determine whether approval under Article 97...may be required for this project". The Oak Bluffs Water District property is mapped as Article 97 land by Mass GIS. Disposition of Article 97 land requires approval by the Conservation Commission, the Board of Selectmen and a 2/3 vote of the Massachusetts Legislature and the Governor.**
- **The Applicant has submitted a document that asserts that installing a 1.46 MegaWatt Solar Facility is the equivalent of sequestering the carbon dioxide of 1,081 acres of forest. The Equivalence rationale credits the energy produced with solar panels as avoided emissions if the same amount of energy were produced using the existing dirty energy practices such as coal and natural gas.**
- **However:**
 - **A tree actually absorbs carbon dioxide, ozone, methane, nitrous oxides, chlorofluorocarbons and other pollutants and produces oxygen.**
 - **A forest provides an ecosystem and habitat.**
 - **You could consider solar array proposals that require clearing of forest as diverting the SREC capacity away from a potentially cleaner overall system that would exist if solar arrays were only allowed in appropriate locations such as rooftops, Brownfields, parking lots, landfills, etc... as requested by Massachusetts Environmental Organizations in a letter of April 2016.**
- **How would the land be cleared, stumped and graded without risking spills and contamination from the heavy machinery required to do such work?**
- **The Abandonment and Decommission plan states that BlueWave will "return the site to its previous state...which may include the following....stabilization or re-vegetation of the site as necessary to minimize runoff."**

3.2 Environment

- **Vegetation:** 10.37-acres of a currently wooded 56.25 acre water resource protection property will be cleared. **The woods are a healthy mature oak forest that have been described by the Director of the Harvard Forest as "Ancient Woodlands that have been intact for some 10-12,000 years". Other environmental groups have weighed in on the value of these woods and the abutting State Forest. The Applicant contracted a Licensed Forester, John A. Edwards, to evaluate the woods and he made a site inspection and concluded that "Although slightly over 100 years old, these trees are not unique in age or size..."**
- **Archaeology:**
 - **The Massachusetts Historical Commission has written (on August 16, 2016) that: "...multiple ancient Native American archaeological sites are recorded in proximity to the project impact area. Undisturbed portions of the project impact area are archaeologically sensitive."**

- **The MHC requests that an intensive (locational) archaeological survey be conducted for the archaeologically sensitive portions of the project.**
- **Habitat:** The whole site is designated as NHESP Habitat for State Listed Rare Species.
 - NHESP said that the applicant requested pre-filing review and feedback on conceptual project plans. During consultations to date, the Division encouraged the applicant to consider alternative designs/configurations that minimize impacts to state-listed species and their habitats to the greatest extent possible.
 - They focused on several issues, including (but not limited to) the following: 1. Focusing development toward the northern and eastern portions of the property; 2. Consolidating development in order to reduce fragmentation of remaining habitat; 3. Managing shadow buffers (areas of managed vegetation between fence and "edge of clearing"); 4. Using a seed mix native to Nantucket for stabilizing/vegetating areas within the fence.
 - Based on a preliminary review of the original site plans and with certain conditions the NHESP does not anticipate that the project would rise to the level of a Take of state-listed species or require a Conservation & Management Permit to proceed.
 - They will not make an official determination pursuant to the MESA until they have received a formal filing and all required materials for review.
- **Landscaping:** A six foot high fence is proposed around the two large solar fields. The area cleared for the solar panel array within the Zone 2 Area of Contribution cleared area will be seeded with "Solar Farm Seed Mix" low-growing, low-maintenance fescues. The areas to be cleared with the Zone 1 Areas of Contribution must be at least 300 feet from the wellhead and can only be stumped with no disturbance to the soil.
- **Open Space:** The property is listed on MVC GIC mapping as permanently protected open space. Due to the sensitive nature of the well head protection area public access is limited.
- **Lighting:** No lighting is proposed.
- **Noise:** The facility will operate 24 hours a day/ 7 days a week. Peak operation is during the day. The facility will not be manned but will be monitored from offsite.
- **Energy/Sustainability:** The proposal is to construct a 1.46 +/- MW Solar Farm.
 - **The output from the solar panels should be sufficient to cover the O.B. Water District electricity needs with renewable energy which will result in an approximately 30-40% savings in the Districts annual electricity bill (currently approximately \$100,000) over 20 years.**
- **Water Source:**
 - According to a Source Water Assessment and Protection (SWAP) Report done by the Mass DEP for the Oak Bluffs Water District in 2003 "The wells are located in an EPA designated Sole Source Aquifer, which is defined as the sole or principal source of drinking water for a given aquifer area which is needed to supply 50% or more of the drinking water for that area and for which there are no reasonably available alternative sources should the aquifer become contaminated. Therefore, Oak Bluffs groundwater sources are in an aquifer with a high vulnerability to contamination due to its sole source status and the absence of hydro-geologic barriers (i.e. clay) that can prevent contaminant migration."
 - The DEP recommends for Zone 1 "to the extent possible to remove all non-water supply activities... and keep any new non water supply activities out of the Zone 1.
 - Mass Drinking Water Regulations, 310 CMR 22.22(1) and 22.21(3)(B) "require activities in the Zone 1 to be limited to those directly related to the provision of public drinking water or that will have no significant adverse impact..."

- However, in recent years with the push for renewable energy the State has revised their rules to allow some projects other than “those directly related to the provision of public drinking water” to occur on water resource protection areas.
- The Massachusetts DEP issued a boil water order for Oak Bluffs Water District users in 2009 and 2013 due to bacterial contamination.
- **Wastewater / Stormwater:**
 - **Soils:** The soil type for most of the property is Carver loamy coarse sand (CeA). This type of soil is “excessively drained” with permeability that is “very rapid”. Parts of the site are also Riverhead Sandy Loam (RvA & RvB) which is “well drained”.
 - The water table on the property is probably perched at an elevation of 50-60 feet.
 - The Goodale Gravel pit lies between this site and the Head of the Lagoon.
 - **Nitrogen Loading:**
 - **The site is in the Lagoon Pond Watershed. The status of the watershed is impaired. According to current MVC policy the nitrogen load for The Lagoon Pond watershed is 3.4 kilograms per acre per year.**
 - **The Nitrogen budget for the 56.25 acre property is 191.25 kg/yr.**
 - **Clearing 10.37 acres and will create a nitrogen load to Lagoon Pond of 33.77 kg/yr.**

3.3 Transportation

- **Access:** The site is accessed from an existing road off of Airport (Barnes) Road. The access to the Little Pond Subdivision runs along the edge of this property.
- **Circulation:** A new circular emergency vehicle turn-around has been included in the revised plan between Wells 4 and 5.
- **Bicycle and Pedestrian:** The bike path (aka Shared Use Path - SUP) that runs along Airport (Barnes) Road and through the State Forest abuts the property on two sides.
- **Traffic Summary:** In terms of overall traffic operations and parking issues there are no significant deficiencies that would occur from an increase in traffic generated by the proposal.

3.4 Affordable Housing

- The Solar Array Project is a public-private partnership between a private solar developer and the Oak Bluffs Water District. The MVC has an unwritten policy not to apply its Affordable Housing Policy to municipal or religious institutions.

3.5 Economic Impact

- **The project should benefit the District with an approximately 30-40% savings in their annual electricity bill (approximately \$100,000) over 20 years.**
- It is not anticipated that the proposed project will have a significant impact to municipal services such as police and fire.
- The development of the proposed project will generate a very small number of new temporary jobs in the Construction and Professional Service Sector Industries.

3.6 Scenic Values

- **Streetscape/Viewscape: The project and clearing will be visible from a 600+/- foot section of the State Forest and bike path.**
- **Building Massing:** The solar panels will be mounted on a racking system elevated 3’ to 7.5’ above the ground. A 6 foot high fence is proposed around the entire perimeter of the project.

3.7 Local Impact/Abutters

- Abutters from the Little Pond Subdivision expressed concerns with the original plan for their view as well as their access to their neighborhood.

4. CORRESPONDENCE

- 4.1 Town Officials: The Oak Bluffs Planning Board** recommended to the MVC that the O.B. Water District Solar Array project not be considered a DRI. The Board feels that the current solar zoning bylaws in place in Oak Bluffs are sufficient for reviewing this project". The **West Tisbury Conservation Commission** resubmitted (August 31) a letter from May which they sent with "concerns about the proposed solar array location for the following reasons: Siting adjacent to the Greenlands Water Resource Protection DCPC District; impact on wildlife habitat; proposed plantings and fencing; and water quality. They note that the Town of West Tisbury "purchased 365 acres of land that is located over this aquifer to be set aside for conservation purposes for protection of the island's sole source aquifer from any development or activities that would have an adverse impact on the island's private and public drinking water supply".
- 4.2 Island and Environmental Organizations: Tim Boland (Executive Director of the Polly Hill Arboretum)** submitted a letter on March 6 that was revised on August 15, 2016 based upon the revised plan stating that as "a forest ecologist I am against clearing in this area as it represents a greater opportunity to mitigate climate change through ancient forest preservation...Projects like these should not remove our most valuable natural resources. I hope the Commission and the citizens of Martha's Vineyard realize what a terrible loss this would be. While solar power itself is admirable, this project is clearly in the wrong place." **David Foster (Director of the Harvard Forest)** submitted a letter on March 6 that was revised on August 15, 2016 based upon the revised plan stating: "...the proposition to destroy forests, which are one of nature's most efficient solar collectors, with a manufactured solar collector is counterintuitive and counterproductive...The site is part of the largest block of Ancient Woodlands on the Island... 2. The site abuts the largest permanently protected block of Ancient Woodlands on the Island... 3. Given the stated purpose of the tract—to protect water quality and protection—the best approach to its long-term management is to leave the forest intact. Solar production of energy is a critical step for the Vineyard and broader society, but it should be sited on existing infrastructure or open sites where it does not conflict with and undermine the many benefits of the existing natural infrastructure". **Tim Boland (Polly Hill Arboretum)** submitted an email on August 29, 2016 in response to the Applicants "argument and facts and figures in regards to mitigation...does not make sense at all to me, its comparing apples to oranges. There is no validation for the removal of an existing ancient forest on a finite landmass, particularly on a critical water resource area...They fail to recognize in all cases the inherent value of "living forests". They are not replanting forests ...so no real mitigation here based on the loss of a living forest. Irreplaceable.... We can expect more troubles or impacts on MV forests from climate change causes... drought...The genus Quercus (oaks) have the largest association of insects, amphibians, birds and other wildlife dependent on them ... They are known worldwide as ecosystem pillars... Forests are alive – solar panels are not. The ecosystem services of living forests far outweigh the single carbon sequestering model put forth here..." **John C. Clarke, Director of Public Policy & Government Relations for Mass Audubon** has written to express serious concerns stating that "Ancient forests like this one are particularly valuable natural resources as they have never been cleared and plowed, allowing the soil to remain intact along with the native seedbed unlike much of the state where the land has been intensively farmed in the past... careful site selection for renewable facilities of all types is important to minimize the loss and fragmentation of wildlife habitat and forests that sequester carbon and provide many other valuable functions including nutrient retention and water quality

protection..." This letter included an attached letter signed by the **TTOR Director of Policy, Massachusetts TNC Director of Government Relations, Mass Land Trust Coalition President and Mass Audubon Legislative Director** to the D.O.E.R. written this April urging the State to eliminate the SREC incentives for locating solar farms in inappropriate locations.

Jennifer Ryan, Director of Policy for The Trustees of Reservations (TTOR) has written stating "...it is important that we not undermine protected open space, natural habitats, and the benefits that they bring. There are clear alternatives to clearing forest, including rooftop, landfill, and parking lot arrays. Of note, healthy forests both sequester carbon and large, intact blocks of forest are better equipped to adapt to a rapidly changing climate..." She adds that "According to Mass GIS, the parcel is municipal open space and is protected under Article 97 of the amendments to the Massachusetts Constitution. Such parcels are subject to the Executive Office of Energy and Environmental Affairs Land Disposition Policy including review by appropriate town bodies, a hearing and 2/3 affirmative vote of the Great and General Court, and approval by the Governor."

Luanne Johnson, Director/Wildlife Biologist, Biodiversity Works has written in opposition stating "renewable energy projects should not result in the net loss of conservation land"

4.3 Public: Rodney and Daryl Alexander have written in opposition. **Susan Desmarais** has written in opposition to the proposal noting that the "forest and the Greenlands nearby are the lungs of this island" and that cutting them is "inconceivable" and "it just doesn't make sense on any level". **Reverend Peter Kreidler** has written in opposition noting that "A forest is more than the sum of its parts, and to replace the under-brush, displace the resident fauna, and compromise the integrity of the eco-system is a serious violation today of the mandate to till and care for creation...Destroying a gift incapable of being re-created for metal, wires, glass, and a complex infrastructure goes against our human responsibility to sustain creation... The Earth is our fragile island home, and in microcosm the island of Martha's Vineyard may signal the future story unfolding before us. When islands lead the people will follow..."

4.4 Applicant Consultant: John A. Edwards, a Licensed Private Forester (#65) from Hadley, Massachusetts, commissioned by the Applicant conducted a site evaluation on August 29, 2016. He states that "All trees sampled in this report were located within 100' of Test Pit 4... A total of seven (7) trees were sampled to determine species and age...Several shallow soil pits were established to search for evidence of plowing...Results were inconclusive...The site area is predominantly an oak type with typical associated species of Scrub Oak, Huckleberry, Blueberry shrubs species, and ferns... There was no hurricane evidence detected on the proposed site... Based on (his) observations, (he) believes the proposed site was a woodlot, with cordwood being the predominant crop...Most of the dominant trees however were poor grade with significant defect. Although slightly over 100 years old, these trees are not unique in age or size... (He) observed no evidence of stumps on the site. It is possible the site was once planted in White Pine, assuming that planting efforts on the island extended into the 1970's. The pines found were dominant, but scarce on the site... In view of the probable history of land use, this property appears to be typical of how marginal land was used by the islanders and has no unique history as such..."; **Kevin Johnson, Superintendent O.B. Water District (Co-Applicant)**, has written in support of the application noting "the goal of this project is to help cover the Water District's ordinary operating costs...Cost savings allow the Water District to help try to keep water rates low ...There have been some concerns over the protection of the drinking water supply, which the Water District takes very seriously as steward of the land. The O.B. Water District ...are obligated to ensure safe potable drinking water by protecting our well fields and our infrastructure...and concerns over the protection of the ground water have been nullified...It is our feeling that the benefits of this project...far outweigh any potential detriments."