



CROSSMAN ENGINEERING

Consulting Engineers & Surveyors

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DEVELOPMENT PLAN REVIEW MEMORANDUM

To: James Lamphere, Town Planner
Town of Hopkinton

From: Steven M. Cabral, P.E. and Douglas Allam, P.E.
Crossman Engineering

Date: June 24, 2020

Re: Review of Revised Material for Development Plan Review Submission for Frontier Road Solar

Since March 24, 2020, we have received a series of submission documents from the applicant's design team and prepared review memoranda on April 13, 2020, May 7, 2020, May 8, 2020, May 25, 2020 and May 27, 2020, in addition to having multiple discussions with the applicant's team to clarify any comment. During this period, the applicant has been responsive and made considerable effort in resolving outstanding issues. For brevity, previous comments that have been resolved will not be discussed in this memo.

The most current application documents include:

Documents Received on June 23, 2020:

- Frontier Solar Site Plan Set, Revision No. 7, dated June 23, 2020
- Frontier Solar Landscape Plans, Revision No. 4, dated June 22, 2020
- Stormwater Management Report, dated June 17, 2020
- Soil Erosion and Sediment Control Plan, dated April 27, 2020
- Stormwater System Operation & Maintenance Plan, dated June 23, 2020

Documents Received on June 10, 2020:

- Response to Development Plan Review Memorandum, dated June 10, 2020
- Attachment 1 Overall Site Layout Plan, Revision No. 5, dated 06-04-20
- Attachment 2 Environmental Impact Statement 2nd Update, dated June 10, 2020

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103 Commonwealth Avenue, North Attleboro, MA 02763

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Previous submissions also included Environmental Impact Statement (EIS), Site Analysis & Existing Conditions, Solar Panel Technical Data, Noise Analysis, Wildlife Habitat Assessment, Decommissioning Cost Estimates, Project Timeline, Solar Panel Material of Construction Evaluation, Salvage and Reuse Value Analysis, in addition to response to previous comments.

Following is a summary of unresolved items:

1. Narraganset Electric Company Easement

On the east end of the project, solar panels are being placed within an area identified as an existing Narraganset Electric Company Easement. This easement currently has overhead lines. We understand that the applicant is actively working with National Grid on the relocation of the utility poles and easement. Any changes in the solar layout or additional clearing to accommodate the relocated poles should be subject to Town approval

2. Rhode Island Department of Health (RIDOH)

The existing on-site well services the restaurant/clubhouse (which is now vacant). Since the existing well and water system were permitted by the Rhode Island Department of Health as a Transient, Non-Community Public Water System, relocation of the water line and construction of the solar field within the well's 200 ft and 400 ft protective radii alters the approved RIDOH Water Supply Plans.

As a previous consultant to RIDOH, we anticipate that the solar field will not be allowed within 200 feet of the existing well, unless the owner abandons the public well and negates its license or relocates the well. The Non-Residential Photovoltaic Solar Energy Systems Ordinance states that construction must be consistent with applicable local and state requirements and as designed, conformance to this requirement is not documented.

3. Landscape Plans

Based upon Planting Area B on Sheet 4, the stormwater pond berm needs to shift to the south. The proposed trees should not be placed on a stormwater pond berm because the root growth negatively impacts the earthen berm integrity.

Also, since the Ordinance states that the system must be constructed and operated in a manner that minimizes any adverse visual impacts, we recommend that the Planning Board consider a condition that will require improvements if the in-place plantings and fencing do not provide the intended visual barrier during all seasons upon initial planting or at any time during system operation.

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4. Operations and Maintenance (O&M) Plan

For the final document, it is recommended to insert the Owner & Operator contact information and an emergency response process. We also understand that no module washing will be performed. This should be stated in the final O&M.

5. Decommissioning Cost Estimate

Crossman Engineering prepared an independent decommissioning cost estimate based upon current costs for land activities and based upon decommissioning cost guidance from the New York State Energy Research and Development Agency, Solar Guidance. The estimate is summarized below and is attached at the end of this memorandum.

Current Decommission Cost	\$	478,064.26	
Estimated Salvage Value	\$	<u>200,000.00</u>	
Net Current Value**	\$	278,064.26	2020 Dollars

- **Notes:**
1. The cost value does not include the cost of reforestation of existing wooded areas.
 2. For cost items based upon a MW value, those total costs will vary if the MW value changes.

6. Infiltration Pond A

Solar arrays span through Pond A and permanent iron pins are proposed to designate the limits of the pond. Since iron pins can be a tripping hazard, we recommend that wood posts, such as cedar posts (3 ft. tall), be used instead of the iron pins to delineate the pond location. Without the markers, the Operator will not know the limits to be inspected and maintained.

The O&M Manual mentions a grass maintenance path for Pond A but it was not found on the Site Plan. For clarity, the Plan in the O & M document, should identify that the limits of inspection and sediment removal extend to the posts, including beneath solar panels, and not just the pond bottom area at elevation of 150.

7. Low Flow Outlet Pond Riser

The riser is shown wrapped in a silt sock fabric and will be exposed. Some silt socks are biodegradable and not intended to be a permanent feature, therefore we recommend that a specific product be identified. Also, inside the low flow riser there is a 2-inch orifice that can clog with build-up of sediment/silt. The proposed silt sock fabric will be beneficial in preventing clogging but we recommend that part of the O&M procedure include accessing and checking the 2-inch orifice for silt. (This 2-inch orifice is the main outlet control).

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8. Infiltration Pond B

The northern pond berm should be shifted so that the proposed trees will not be planted on the berm. The root growth can damage a berm's stability.

9. Infiltration Pond D

The primary outlet for Pond D is the overflow weir which is directed to an existing catchbasin labeled on the Plan between the pond and Maxson Hill Road. On Site Plan 4, we could not find the pipe size or slope. Since this catchbasin and pipe are needed to prevent flow into Maxson Hill Road, we recommend that the catchbasin and pipe be examined for condition and capacity. (Note: A full CB was not evident in the field.)

10. Infiltration Pond C

The primary outlet for Pond C is an overflow weir. The drainage analysis is based upon this primary outlet flow reaching Detention Pond F for additional attenuation. The collection and piping network between Pond C and Pond F need to be surveyed and analyzed to confirm that the system has adequate capacity to convey the flows. Based on the plan information, capacity is unknown.

11. Stone Trenches Parallel to Slope

For areas where the solar panels run perpendicular to the contour lines, the designer agreed to add a series of stone trenches parallel to the contour lines to assist in minimizing erosion and dispersing runoff. On the Plan copies that were received, the stone trenches are very faint. We recommend that the Plans more clearly demonstrate the location, length, width and depth of the trenches.

12. Access

Fire apparatus does not appear to have access to all portions of the project, especially the northern most sections, and some portions of the stone access drive appear to have a 16% slope, which may not be suitable for emergency vehicles. Per the Town of Hopkinton Chapter 246 Non-Residential Photovoltaic Solar Energy Systems, General Requirements, A.7, states the applicant shall consult with the Fire Marshal prior to the submission of any material to the Planning Board for review. We recommend input from the local fire officials.

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13. Town of Hopkinton Chapter 246 Non-Residential Photovoltaic Solar Energy Systems:

PSES Design Guidelines, 2.a, requires all appurtenant structures, including but not limited to storage facilities, transformers, inverters and substations, to be architecturally compatible. The applicant stated the final structures will be submitted to the Town as part of the building and electrical permit process, therefore are not available at this time.

Independent Conceptual Cost Estimate of Solar Decommissioning (9.25 MW)
June 10, 2020, Revised June 12, 2020

Item	Unit	Quantity	Unit Price	Total
R&D Chain Link Fence	LF	5000	\$ 2.00	\$ 10,000.00
R&D Solid Board Fence	LF	2335	\$ 2.00	\$ 4,670.00
R&D Utility Poles	EA	6	\$ 500.00	\$ 3,000.00
Trimming & Fine Grading Disturbed Areas	SY	156875	\$ 0.50	\$ 78,437.50
4 Inch Loam Supplement	SY	10000	\$ 4.00	\$ 40,000.00
Seeding	SY	58080	\$ 1.20	\$ 69,696.00
Erosion Control & Erosion Repairs	LS	1	\$ 17,500.00	\$ 17,500.00
Remove Rack Wiring	MW	9.25	\$ 1,229.50	\$ 11,372.88
Remove Panels	MW	9.25	\$ 1,225.00	\$ 11,331.25
Dismantle Racks	MW	9.25	\$ 6,175.00	\$ 57,118.75
Remove Electrical Equipment	MW	9.25	\$ 925.00	\$ 8,556.25
Remove Concrete and Ballasts	MW	9.25	\$ 750.00	\$ 6,937.50
Remove Racks	MW	9.25	\$ 3,900.00	\$ 36,075.00
Remove Cables	MW	9.25	\$ 3,250.00	\$ 30,062.50
Trucking to Recycle	MW	9.25	\$ 1,125.00	\$ 10,406.25
As-Built Survey	EA	1	\$ 10,000.00	\$ 10,000.00
Inspections	hrs	120	\$ 95.00	\$ 11,400.00
Final Report	hrs	32	\$ 95.00	\$ 3,040.00
Infiltration System Maintenance/Repair	LS	1	\$ 15,000.00	\$ 15,000.00
				\$ 434,603.88
		10% Contingency		\$ 43,460.39
		Current Total		\$ 478,064.26
		Estimated Salvage Value		\$ 200,000.00
		Net Current Value**		\$ 278,064.26 **

- **Notes:**
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 2. For cost items based upon a MW value, those total costs will vary if the MW value changes.

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June 10, 2020

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R&D Solid Board Fence	LF	2335	\$ 2.00	\$ 4,670.00
R&D Access Road	CY	1123	\$ 5.00	\$ 5,615.00
R&D Utility Poles	EA	6	\$ 500.00	\$ 3,000.00
Trimming & Fine Grading Disturbed Areas	SY	156875	\$ 0.80	\$ 125,500.00
4 Inch Loam Supplement	SY	10000	\$ 4.00	\$ 40,000.00
Seeding	SY	58080	\$ 1.20	\$ 69,696.00
Erosion Control & Erosion Repairs	LS	1	\$ 17,500.00	\$ 17,500.00
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Inspections	hrs	120	\$ 95.00	\$ 11,400.00
Final Report	hrs	32	\$ 95.00	\$ 3,040.00
Infiltration System Maintenance/Repair	LS	1	\$ 15,000.00	\$ 15,000.00
				\$ 487,281.38
		10% Contingency		\$ 48,728.14
		Current Total		\$ 536,009.51
		Estimated Salvage Value		\$ 200,000.00
		Net Current Value**		\$ 336,009.51 **

****Note: The cost value does not include the cost of reforestation of existing wooded areas.**