

Mr. Bruce Flower, Chairman (Via email)
Town of Wappinger
Planning Board
20 Middlebush Road
Wappingers Falls, NY 12590

Re: Mid-Hudson Islamic Association Solar Array
Tax Parcels #6258-02-628535
CPL # 14926.02
TOW # 22-4101

Dear Chairman Flower and Planning Board Members:

This office received copies of the following documents:

- Special Use Permit Application, dated May 24, 2022, prepared by Ahmed Shah of the Mid-Hudson Islamic Association Inc
- Application for Site Plan Approval, dated May 24, 2022, prepared by Ahmed Shah of the Mid-Hudson Islamic Association Inc
- Owner Consent Form, dated May 25, 2022, prepared by Ahmed Shah of the Mid-Hudson Islamic Association Inc
- Short Environmental Assessment Form, dated May 23, 2022, prepared by Sam Wilo of SunCommon
- 5-Sheet Plan Set, last revised May 6, 2022, prepared by SunCommon

Based on our review we offer the following engineering related comments:

1. Please provide a construction detail for the trenching between the array and the main load center on parcel # 6258-02-647552. Our office defers to the Town Attorney for a decision on whether a grading easement is needed for this trench, as the applicant owns both parcels.
2. Please provide necessary solar installation qualifications from the contractor.
3. Please show roof ventilation, ground access areas, minimum perimeter pathways of 4' in width, and interior pathways.
4. Please provide the approved interconnection agreement from Central Hudson Gas & Electric for the connection to the electrical grid, as per Town Code Section 240-36.3 Paragraph C, once received by the applicant.
5. Prior to final approval a site plan prepared and stamped by a NYS-licensed Professional Engineer or Registered Architect is required.
6. Prior to final approval, an electrical wiring diagram for the system prepared and stamped by a NYS-licensed Professional Engineer or Registered Architect is required. This diagram should show the following, as per the New York State Solar Guidebook:
 - a. Solar electric module array information – number of modules in series, number of strings.
 - b. Quantity, make, and model of UL-listed solar PV modules.
 - c. All conductor types, ratings, and conduit type (if applicable). Solar electric source circuit conductors are solar PV wire (NEC 690.31(B)).
 - d. Max voltage of 600 VDC (NEC 690.7(C)) (1,000 VDC wire may be used on 600 VDC systems).
 - e. Rating (voltage and current) for all disconnects.
 - f. Voltage drop is minimized (NEC 210.19(A)Informational Note No. 4).

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- g. Provision for Rapid Shutdown per NEC 690.12. Using microinverters or string inverters with DC Power optimizers is one way of meeting this requirement.
 - h. DC disconnect is present (may be integral to inverter) (NEC 690.13).
 - i. Quantity, make, and model of UL-listed inverter provided.
 - j. AC disconnect appropriately sized for inverter output (NEC 690.8(A)(3), 690.8(B)(1)).
 - k. Conductor type, rating, and conduit type (if applicable) provided for all conductors.
 - l. If supply-side connection, meets all requirements of NEC 705.12(A), including:
 - l.i. Service-rated AC disconnect specified, at least 60 amps, with appropriate overcurrent protection device. If breaker used, must meet or exceed utility fault current kAIC rating.
 - l.ii. Conductors between disconnect and point of interconnection are sized at least 60 amps (#6 or larger).
 - l.iii. Supply side connection made between main service panel's main disconnect and utility meter.
 - m. If load side connection, meets all requirements of NEC 705.12(B), including:
 - m.i. Inverter output connection is made at a dedicated circuit breaker or fusible disconnect.
 - m.ii. The sum of 125% of the inverter(s) output current plus the main circuit breaker rating must be less than or equal to 120% of the bus or cable rating (NEC 705.12(B)(3)(b)).
 - m.iii. Backfed breaker located at opposite end of busbar from main breaker (NEC 705.12(B)(2)(1)).
 - n. Equipment grounding conductor (EGC) present at all components likely to become energized, and sized according to NEC 250.122.
 - o. If not using an isolated/ungrounded/transformer-less inverter, grounding electrode conductor (GEC) present and continuous from inverter to service disconnect, sized according to NEC 250.66.
7. Prior to final approval, a structural analysis of the roof prepared and stamped by a NYS-licensed Professional Engineer or Registered Architect is required. This structural analysis should address the following items, as per the New York State Solar Guidebook:
- a. Weight of the existing roofing (composition shingle, metal, masonry, etc.).
 - b. Number of layers of roof covering.
 - c. Method of waterproofing penetrations (flashing is required by the 2020 NYS Uniform Code).
 - d. Type of racking system (engineered product) and height of solar PV modules from surface of roof.
 - e. Location-specific wind load and snow load.
 - f. Type, dimensions, and spacing of roof structural framing.
 - g. Calculations must be provided if any of the following apply:
 - g.i. Roofing is not lightweight, or roof has multiple layers of covering.
 - g.ii. Racking system is not engineered for mounting of solar PV modules.
 - g.iii. Modules will be mounted more than 18 inches above roof surface.
 - g.iv. Modifications must be made to framing to strengthen roof structure.
 - g.v. Solar electric system and racking will add more than 5 pounds per square foot to dead load, or more than 45 pounds per attachment point, calculated as follows:
 - h. Total weight of solar PV modules, racking, and mounting hardware _____ pounds.

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- i. Total number of attachment points to roof _____.
- j. Weight per attachment point ($A \div B$) _____ pounds.
- k. Total area of solar PV array _____ square feet.
- l. Distributed weight of solar PV array on roof ($A \div D$) _____ pounds/square foot.

If you have any questions, please contact me at (845) 686-2305, or e-mail at jbodendorf@cplteam.com.

Very truly yours,
CPL

Jon Bodendorf, P.E.
Senior Municipal Engineer

JDB/wts

cc: Barbara Roberti, Zoning Administrator (by e-mail copy)
Susan Dao, Building Inspector (by e-mail)
James Horan, Esq., Attorney to the Planning Board (by e-mail copy)
Malcolm Simpson, Planning Board Planning Consultant (by e-mail copy)
Nicholas Maselli, Planning Board Member (by e-mail copy)
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