

**PETITION NO. 1431  
SUNJET ENERGY, LLC- BETHLEHEM**

**SITING COUNCIL INTERROGATORIES – SUNJET ENERGY RESPONSES  
December 29, 2020**

**PROJECT DEVELOPMENT**

1. What is the length of the lease with the landowner? Does the lease contain provisions to extend the lease for continued use as a solar facility? If so, over what time interval(s)?

**Response:**

**The lease provides for a 20-year initial term with the opportunity for two five-year extensions at the option of the solar company.**

2. Referring to Petition p. 4, does the ZREC contract contain provisions for a five-year extension?

**Response:**

**No. The Standard Eversource ZREC contract provides for a 15-year term only.**

3. Once the ZREC contract expires and the solar facility has not reached the end of its lifespan, would the Petitioner decommission the facility or seek other revenue mechanisms for the power produced by the facility?

**Response:**

**The Petition intends to continue operating the solar system after the 15-year ZREC contract expires and intends to continue operating the solar system array until the end of the lease term plus any lease extensions.**

4. If the project is approved, identify all permits necessary for construction and operation and which entity will hold the permit(s)?

**Response:**

**The project anticipates that the following permits will be required, CT DEEP General Permit for the Discharge of Stormwater and Dewatering Wastewater from Construction Activity and Town of Bethlehem Building and Electrical Permits.**

5. Would the Petitioner participate in the ISO-NE Forward Capacity Auction? If yes, which auction(s) and capacity commitment period(s)?

**Response:**

**No.**

6. Referring to Petition p. 4, did the Town present project recommendations during the in-person meetings? If so, describe the recommendations and were these recommendations included within the project design?

**Response:**

**Yes. The Town/Landowner proposed shifting the solar array to the left side of the property where the property grade was less desirable for farming and to allow more property for continued farming. SunJet agreed to this proposal and shifted the solar array accordingly.**

### **PROPOSED SITE**

7. What is the municipal zoning designation of the proposed site?

**Response:**

**The Town of Bethlehem does not have zoning regulations.**

8. Is the site parcel, or any portion thereof, part of the Public Act 490 Program? If so, how does the municipal land use code classify the parcel(s)? Is the Project area located within lands enrolled in the Public Act 490 Program? If so, how would the project affect the status of such land?

**Response:**

**Yes. The portion of the property where the solar array will be located is expected to lose this status.**

9. Has the State of Connecticut Department of Agriculture purchased any development rights for the project site or any portion of the project site as part of the State Program for the Preservation of Agricultural Land? If so, can the facility be developed on such land? Please explain.

**Response:**

**No.**

10. Provide the distance, direction and address of the nearest property line and nearest off-site residence from the solar field perimeter fence.

**Response:**

**The nearest off-site residence is owned by Joseph L. & Lisa M. Reda, located at 87 Guilds Hallow Road, and is approximately 174' northwest of the solar array perimeter fence.**

11. Referring to Petition Exhibit I, why was a portion of the project footprint shifted from more moderate grades along the crest of the hill to the steeper slopes on the west side of the hill?

**Response:**

**The project footprint was revised per landowner request, so they could continue to hay the more moderate grade areas.**

12. What is the length of the new section of the site access drive? Describe any upgrades to the existing driveway that are necessary for site access.

**Response:**

**The new section of site access drive is approximately 245'. There are no upgrades necessary to the existing driveway for site access.**

13. Does the lease agreement contain any provisions related to site restoration at the end of the project's useful life? If so, describe such provisions.

**Response:**

**Yes. The lease requires the solar array to be completely removed and the land reinstated to pre-solar array condition. The lease provides for a special solar project decommissioning escrow account to achieve solar project decommissioning at the end of the useful life of the solar array.**

14. The Petition Decommissioning Plan (Exhibit G) appears to be for another site. Please submit a project specific decommissioning plan that includes provisions within the lease agreement, if any, related to site restoration at the end of the project's useful life.

**Response:**

**Please see the Decommissioning Plan attached as Exhibit A.**

### **ENERGY OUTPUT**

15. Have electrical loss assumptions been factored into the output of the facility (i.e. soft shading, average weather conditions, equipment)? What is the output (MW AC) at the point of interconnection with these loss assumptions?

**Response:**

**Yes, losses have been factored into facility output. Output at the POI is 1.0MW AC and 0.99 MW AC respectively (Bethlehem 1 and 2)**

16. What is the projected capacity factor (expressed as a percentage) for the proposed project? Would the capacity factor decline over time? If so, what are the contributing losses?

**Response:**

**On a ratio of AC MWh to AC MWh the capacity factor is roughly 17%. The capacity factor will decline over time with respect to contributing losses such as equipment degradation.**

17. Would the power output of the solar panels decline as the panels age? If so, estimate the percent of loss per year.

**Response:**

**Yes, roughly 0.8% per year.**

18. Is the project being designed to accommodate a potential future battery storage system? If so, please indicate the anticipated size of the system, where it may be located on the site, and the impact it may have on the ZREC agreement.

**Response:**

**No.**

19. Does the design of the Project, including the method of interconnection, allow it to serve as a microgrid?

**Response:**

**No.**

20. If one section of the solar array experiences electrical problems causing the section to shut down, could other sections of the system still operate and transmit power to the grid?

**Response:**

**Yes. Each inverter (8 total on this site) may operate independently and continue to export and transmit power to the grid in the event described.**

21. Do solar facilities present a challenge for the independent system operator for balancing loads and generation (to maintain the system frequency) due to the changing (but not controlled) megawatt output of a solar facility? What technology or operational protocols could be employed to mitigate any challenges?

**Response:**

**Interconnection for projects of this size is handled solely by Eversource and not the ISO. Eversource's standard operational guidance and upgrade requirements per the executed interconnection agreement will be employed here.**

## SITE COMPONENTS AND SOLAR EQUIPMENT

22. Revise the site plans to include the following;
- a. locations and height of the four proposed utility poles required for project interconnection;
  - b. solar field, fence, access road, landscaping and utility pad detail;
  - c. legible pre-construction and post-construction contour lines;
  - d. temporary sediment trap and permanent stormwater basin detail;
  - e. limits of clearing and grubbing;
  - f. areas of subsurface trenching required for the tracking system and electrical conduits;
  - g. site construction phasing/sequencing details;
  - h. environmental mitigation notes and fuel spill prevention plan;
  - i. type and locations of erosion and sediment controls; and
  - j. laydown area.

Please see attached the Site Plan in Exhibit B or at the link below:

Site Plans - <https://allpoints.egnyc.com/dl/d2DS4gHIoL>

23. Is the wiring from the panels to the inverters installed on the racking? If wiring is external, how would it be protected from potential damage from weather exposure, vegetation maintenance, or animals?

**Response:**

**The wiring from panels to inverters is installed on the racking along the torque tube. The cable is weather rated and designed to withstand the elements. Further the wiring is shielded from the sun and elements per its location underneath the solar panels (along the torque tube).**

24. Provide the following information regarding the solar array system:
- a. to what depth would the racking posts be driven into the ground to meet racking system structural specifications?

**Response:**

- **The posts will be driven to a depth of approximately 10.5 feet and will be roughly 14.5-16' in length (dependent on unique topographical conditions).**

- b. how many panels will each rack hold?

**Response:**

- **54-81 modules per rack**

- c. will the panels be mounted in a portrait or landscape fashion?

**Response:**

- **The panels will be mounted in portrait but facing east/west as this is a tracker system.**

### **INTERCONNECTION**

25. Is the project interconnection required to be reviewed by ISO-NE?

**Response:**

**No.**

26. Is the existing distribution three-phase or would it have to be upgraded from single-phase to three-phase?

**Response:**

**Existing distribution is three-phase.**

27. Referring to Petition p. 7, what component of the interconnection upgrade would be completed by the end of this year?

**Response:**

**None.**

### **PUBLIC SAFETY**

28. Would the project comply with the National Electrical Code, the National Electrical Safety Code and any applicable National Fire Protection Association codes and standards including CT State Fire Prevention Code, Ground Mounted Photovoltaic System Installations, Section 11.12.3?

**Response:**

**Yes, the project would comply with the National Electrical Code, the National Electrical Safety Code, the National Fire Protection Association Codes, and standards including CT State Fire Prevention Code, Ground Mounted Photovoltaic System Installations, Section 11.12.3, and any other applicable code relevant to the project.**

29. Where is the nearest federally-obligated airport? Is an FAA glare analysis required for this project?

**Response:**

**The Waterbury-Oxford Airport is the closest federally obligated, approximately 11.3 miles to the south. The project does not exceed the notice requirement with the FAA and thus does not require a glare analysis. The FFA Determination Letters are attached as Exhibit C.**

30. Referring to Petition page 23, has the Petitioner received a response from the FAA regarding the Study Point Location filing? If so, provide the response.

**Response:**

**Yes. A Determination of No Hazard to Air Navigation was received and was provided in response to Interrogatory No. 29.**

31. With regard to emergency response:

- a. does the project developer intend on conducting outreach and/or training for local emergency responders in the event of a fire or other emergency at the site?

**Response:**

**Yes - if required by the local Fire Department.**

- b. how would site access be ensured for emergency responders?

**Response:**

**Eversource requires a key or access code to locked facilities. The fire department will be provided the same 24/7/365 access.**

- c. in the event of a brush or electrical fire, how would the Petitioner mitigate potential electric hazards that could be encountered by emergency response personnel?

**Response:**

**Emergency placards denote emergency shutoff locations for response personnel. Training with emergency response personnel will outline the unique considerations for solar fields.**

- d. could the entire facility be shut down and de-energized in the event of a fire? If so, how?

**Response:**

**Yes - via emergency shutoff located per posted placards.**

### **ENVIRONMENTAL**

32. Referring to Petition p. 5, provide the Wetland Delineation and Impact Analysis, and the Habitat Review and Assessment reports/documentation.

**Response:**

**The Wetland Delineation and Impact Analysis and the Habitat Review and Assessment documentation is provided on p. 13 to 21 of the Petition and shown in the Petition Exhibit B Figure 2 Existing Conditions Map.**

33. Referring to Petition p. 16, provide more detail regarding the phased sedimentation and erosion control plan that will be implemented to protect Wetland 2.

**Response:**

**The Phased Sedimentation And Erosion Control are shown in detail on EC-1, EC-2, and EC-3 attached in Exhibit D.**

34. Referring to Petition p. 19, what is the status of the Department of Energy and Environmental Protection (DEEP) Natural Diversity Database review?

**Response:**

**The DEEP NDDDB Determination Letter was received and no additional measure beyond what is proposed as part of the Petition is required. See Exhibit E.**

35. Referring to Petition pp. 18-19, can the solar field area be seeded with grasses that provide habitat for grassland bird species?

**Response:**

**Most of the existing hayfield grasses will remain within the solar array and supplemented with a Native Wildflower Mix. See DN-1 attached at Exhibit F.**

36. Has shading from nearby trees been factored into the project design? Is tree cutting anticipated now or in the future to reduce solar panel shading? If so, in what areas?

**Response:**

**Yes - shade has been factored into the design. Tree cutting is not anticipated in the future, although tree trimming might be (at discretion of local landowners and project owner) required to maintain energy output expectations at their currently estimated level.**

37. Can the facility perimeter fence be designed to include a minimum 6-inch gap between the fence fabric and ground level to allow for small wildlife movement through the site?

**Response:**

**Yes, the facility perimeter fence will include a 6" gap.**

38. Are there any wells on the site or in the vicinity of the site? If so, would construction activities, such as driving posts, damage area wells or affect groundwater quality? How would the Petitioner manage and/or mitigate these impacts?

**Response:**

**Yes, there are wells in the vicinity of the site. The Petitioner does not anticipate vibrations associated with driving the tracking posts on site will result in adverse impacts. While the specific conditions of the wells are unknown, it is likely that these are installed within the bedrock aquifer. As such, no disruption to well water flow or water quality is anticipated there for no additional measures are required.**



39. Are there any public recreational areas/scenic roads near the site that would have visibility of the proposed project? If so, describe project visibility from these areas.

**Response:**

**Long Meadow Pond recreation area is located approximately 1.2 miles to the north of the proposed project. Due to topography and existing tree cover, there will be no visibility from this area. There are no scenic roads located in the vicinity of the project.**

40. Describe the visibility of the site from abutting residences and roads. Describe measures to reduce project visibility from these areas.

**Response:**

**The project will have no visibility from any nearby roads except along the crest of the hill. The only residences within sight are aware of the visual change and have not presented objections.**

41. Referring to Petition p. 13, what is the status of the filing to the State Historic Preservation Office?

**Response:**

**As a result of the change in location the project is now located in areas of No/Low cultural sensitivity and thus will have no effect on cultural resources, per the letter dated August 13, 2020 from Heritage Consultants. See the Heritage Consultants letter attached at Exhibit G.**

42. Referring to Petition p. 22, what methodology was used to determine that operational noise from the Project inverters/transformers would not exceed DEEP noise standards at the property boundaries? Was noise data provided by the manufacturer?

**Response:**

**Petitioner reviewed the distance from the proposed location of the inverters and transformers from the nearest property line. The closest property line is approximately 320' to the south of the proposed equipment pad locations. The loudest piece of equipment is the 1MVA transformer at 64dBa. See Exhibit H for transformer specifications. Using the inverse square law, the noise generated would be lower than their DEEP noise standards at the property line.**

43. The Greenhouse Gas (GHG) Assessment in Appendix M of Council Petition No. 1352 compared the life cycle GHG emissions from a solar project to a scenario where the solar project is avoided and an equivalent amount of natural gas-fired electric generation operated for the estimated life of the solar facility. For the proposed project, how would the net GHG emissions (or reduction) over the life of the solar facility and carbon debt payback be affected under this natural gas-fired generation versus proposed solar generation scenario.

**Response:**

**The Greenhouse Gas (GHG) Assessment in Appendix M of Council Petition No. 1352 compared the life cycle GHG emissions from a solar project to a scenario where the solar**

**project is avoided, and an equivalent amount of natural gas-fired electric generation operated for the estimated life of the solar facility. For the proposed project, how would the net GHG emissions (or reduction) over the life of the solar facility and carbon debt payback be affected under this natural gas-fired generation versus proposed solar generation scenario.**

**Petitioner estimates that over 20 years the Project will generate 57,900MWh of electricity, while emitting approximately 13,355 tons of CO2. To achieve the equivalent MWh production over 20 years as the Project, a natural gas generator would emit an estimated 99,131 tons of CO2.**

44. Please submit photographic site documentation with notations linked to the site plans or a detailed aerial image that identify locations of site-specific and representative site features. The submission should include photographs of the site from public road(s) or publicly accessible area(s) as well as Site-specific locations depicting site features including, but not necessarily limited to, the following locations as applicable:

For each photo, please indicate the photo viewpoint direction and stake or flag the locations of site-specific and representative site features. Site-specific and representative site features include, but are not limited to, as applicable:

1. wetlands, watercourses and vernal pools;
2. forest/forest edge areas;
3. agricultural soil areas;
4. sloping terrain;
5. proposed stormwater control features;
6. nearest residences;
7. Site access and interior access road(s);
8. utility pads/electrical interconnection(s);
9. clearing limits/property lines;
10. mitigation areas; and
11. any other noteworthy features relative to the Project.

A photolog graphic must accompany the submission, using a site plan or a detailed aerial image, depicting each numbered photograph for reference. For each photo, indicate the photo location number and viewpoint direction, and clearly identify the locations of site-specific and representative site features show (e.g., physical staking/flagging or other means of marking the subject area).

The submission shall be delivered electronically in a legible portable document format (PDF) with a maximum file size of <20MB. If necessary, multiple files may be submitted and clearly marked in terms of sequence.

**Response:**

**If necessary, multiple files may be submitted and clearly marked in terms of sequence.**

**The Remote Field Review has been completed for the project and can be found in [Exhibit I](#) or at the link below:**

**Remote Field Review - <https://allpoints.egnyte.com/dl/HwrO1VNWmq>**

## FACILITY CONSTRUCTION

45. Has the Petitioner submitted an application for a General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities from DEEP? If yes, on what date?

**Response:**

**Yes, the Petitioner applied for the General Permit on September 30, 2020.**

46. Has the Petitioner met with the DEEP Stormwater Division? If yes, on what date? Please describe any recommendations, comments, or concerns about the project provided by the Stormwater Division.

**Response:**

**Yes, the Petitioner met with the DEEP Stormwater Division on January 29, 2020. The Stormwater Division did have some concerns with the proposed slopes but at that time the project was assuming a fixed tilt system. Since that time, the project has changed to a tracker system.**

47. Provide the area of the solar field (in acres and as a percentage of the total) with slopes equal to or greater than 15 percent for both pre-construction and post-construction conditions.

**Response:**

**Approximately 3.8 acres of the solar array or 32% of the facility area have slopes greater than or equal to 15 percent both pre- and post-construction.**

48. Referring to Petition Exhibit H (Stormwater Analysis), were the site soil conditions downgraded by one soil group and the solar panels modeled as impervious, as recommended in DEEP's draft Appendix I, Stormwater Management at Solar Array Construction Projects document? Please explain.

**Response:**

**Yes. The sites soil conditions were downgraded by one soil group for the analysis of post-construction stormwater flows against pre-construction stormwater flows. To clarify Appendix I does not recommend that solar panels to be modeled as impervious for the purposes of calculating pre- vs. post-construction stormwater flows. The solar panels were modeled as impervious for the purpose of calculating water quality volume for the site.**

49. Are energy dissipators, as depicted in DEEP's draft Appendix I, Stormwater Management at Solar Array Construction Projects document-Figure 2, proposed for this Project? If not, why not?

**Response:**

**No, they are not. Channelization below the drip edge is not expected. Energy dissipators are not proposed for this project as channelization is not expected below the drip edge and additionally because these units are trackers, they the drip edge will constantly be changing throughout the day.**

50. Are the proposed stormwater basins excavation-type basins or berm-type basins? If they are berm-type basins, has the Petitioner consulted with the DEEP Dam Safety program regarding potential permitting requirements?

**Response:**

**The proposed stormwater basins are excavated into existing grade.**

51. Do the stormwater infiltration basins have an emergency spillway with a discharge point that flows onto abutting properties? If so, can the basins be moved or altered to allow for discharged stormwater to remain on the site parcel for a longer period?

**Response:**

**The stormwater basins overflow at the locations where the stormwater leaves the site today and as a result of the drop-in hydrologic soil group the basins are sized to handle additional stormwater flow.**

52. Estimate the amounts of cut and fill in cubic yards for the project. If there is excess cut, will this material be removed from the site property or deposited on the site property?

**Response:**

**The project estimates 3,500cy of cut and 800cy of fill for an excess cut of 2,700cy. The excess cut will remain on property.**

53. Regarding earthwork required to develop the site, provide the following:

a. will the site be graded? If so, in what areas?

**Response:**

**Yes, only in the areas of the stormwater management basins.**

b. what is the desired slope within the solar array area?

**Response:**

**Solar arrays may be installed on grades up to 30%**

c. can the solar field be installed with minimal alteration to existing slopes?

**Response:**

**Yes, there is no alteration to the existing slopes proposed.**

54. Would topsoil be stripped from the site prior to grading? If so, would the topsoil be spread over the disturbed areas once grading is complete? If not, how would growth of new vegetation/grasses be promoted within the graded areas if nutrient rich soils are not present?

**Response:**

**Yes. The topsoil will be stripped in the areas requiring grading and will be spread over disturbed areas once final grade is established.**

55. How would the posts that support the racking system be driven into the ground? If ledge or boulders are encountered, what methods would be utilized for installation?

**Response:**

**Racking system posts will be installed via pile driving machine (most likely a Vermeer PD-10). We anticipate some ledge/boulders will require pre-drilling for post installation. This process involves pre-drill of a pilot hole roughly 4” in diameter. The spoils are then backfilled into the hole. The pile is pounded into the pilot hole and backfill is added to make flush the soil. A pull test procedure has been outlined with the structural and geotechnical EOR to confirm embedment satisfies engineering assumptions and conditions. As soil settles the holes are continually backfilled until they remain flush through expected settling/storm events (typically over a 1-2-year period).**

56. Has a comprehensive geotechnical study been completed for the site to determine if site soil conditions support the overall Project design? If so, summarize the results. If not, has the Petitioner anticipated and designed the Project with assumed subsurface conditions? What are these assumed conditions?

**Response:**

**Yes, a Geotechnical Report was completed for the project. See Exhibit J. The project is being designed to take into account dense fill on site.**

### **MAINTENANCE QUESTIONS**

57. Would the Petitioner remove snow that accumulates on the panels? Would snow accumulation on the solar panels affect the output of the facility? Under what circumstances would snow be removed? Describe snow removal methods.

**Response:**

**The single axis tracker racking intended for this site has a snow stow program that will be employed. A sensor on the tracker control unit senses snow height and then tilts to maximum (+/- 55 degrees) to release the snow once it hits a specific threshold. Snow accumulation is not anticipated to affect the output of the facility with this program engaged.**

58. Would the installed solar panels require regular cleaning or other, similar, maintenance? If so, describe cleaning procedures including substances used. Would this maintenance activity have any impacts to water quality?

**Response:**

**No cleaning or similar maintenance is prescribed for the site.**

59. Revise the Operations and Maintenance Plan to include procedures for the stormwater basins and swales, landscaping, solar panel cleaning and solar array vegetation management that includes site specific DEEP NDDB species protective measures, if applicable.

**Response:**

**The Operations and Maintenance Plan will be revised to include the following language:**

**The Facility will be inspected once per year to determine if there are any issues with the system and perform any preventative maintenance that may be required. The annual inspection will include the following:**

**Stormwater Management & Site Inspection**

- o Ground cover within and outside the Facility for erosion**
- o Stormwater Management Bains shall be inspected for damage including rilling and erosion, sediment accumulation, and nothing is blocking outlet control weir.**

**Mowing**

- o Mowing activities should be avoided during peak usage by these State-listed bird species (April 15th to August 15th).**

60. How would damaged panels be detected? Would the Petitioner store any replacement modules on-site in the event solar panels are damaged or are not functioning properly? If so, where?

**Response:**

**Voltage monitoring at inverter level senses damaged panels and they can be discovered via manual inspection or unmanned drone heat sensor. No spare modules will be stored on site.**

**EXHIBIT A**

**Decommissioning Plan**

**EXHIBIT B**

**Site Plan**



**EXHIBIT C**

**FFA Determination Letter**

**EXHIBIT D**

**Phased Sedimentation and Erosion Control  
EC-1, EC-2, and EC-3**

**EXHIBIT E**

**DEEP NDDB Determination Letter**

**EXHIBIT F**

**Native Wildflower Mix - DN-1**

**EXHIBIT G**

**Heritage Consultants Letter**

**EXHIBIT H**

**Transformer Specifications  
Noise Data**

**EXHIBIT I**

**Remote Field Review**

**EXHIBIT J**  
**Geotechnical Report**