



STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

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VIA ELECTRONIC MAIL

November 14, 2018

David W. Bogan, Esq.
Kathryn E. Boucher, Esq.
Locke Lord LLP
20 Church Street
Hartford, CT 06103

RE: PETITION NO. 1352 – Nutmeg Solar, LLC, petition for a declaratory ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the proposed construction, maintenance and operation of a 19.6-megawatt AC solar photovoltaic electric generating facility on approximately 162 acres comprised of 9 separate parcels located generally south of Bailey Road and east of Route 191 (Broad Brook Road), and associated electrical interconnection to Eversource Energy's Scitico Substation at 20 Bailey Road in Enfield, Connecticut.

Dear Attorneys Bogan and Boucher:

The Connecticut Siting Council (Council) requests your responses to the enclosed questions no later than November 28, 2018. To help expedite the Council's review, please file individual responses as soon as they are available.

Please forward an original and 15 copies to this office, as well as a copy via electronic mail. In accordance with the State Solid Waste Management Plan, the Council is requesting that all filings be submitted on recyclable paper, primarily regular weight white office paper. Please avoid using heavy stock paper, colored paper, and metal or plastic binders and separators. Fewer copies of bulk material may be provided as appropriate.

Any request for an extension of time to submit responses to interrogatories shall be submitted to the Council in writing pursuant to §16-50j-22a of the Regulations of Connecticut State Agencies.

Sincerely,

Melanie A. Bachman
Executive Director

MB/MP/lm

c: Council Members
Neil E. Watlington-Armstrong, Nutmeg Solar, LLC
Matthew Singer, Nutmeg Solar, LLC

**Petition No. 1352
Interrogatories
Set One
November 14, 2018**

Project Development

1. If the project is approved, identify all permits necessary for construction and operation. Which entity will hold the permit(s)?
2. What entity/subcontractor will be constructing the facility? Has this entity/subcontractor constructed other solar projects 5 MW or greater in the Northeast? If so, list similar projects.
3. Page 3 of the Petition notes that the proposed project was selected in DEEP's Small-Scale Clean Energy RFP. Was the proposed project also selected in the Tri-State RFP? If yes, when was a proposal submitted in response to the Tri-State RFP, and on what date was the project selected under the Tri-State RFP?
4. Per the power purchase agreements (PPAs), would the Petitioner sell both the electricity and renewable energy certificates (RECs) to The Connecticut Light and Power Company d/b/a Eversource Energy (Eversource) and The United Illuminating Company (UI)? On page 3 of the Petition, Nutmeg notes that 80.4 percent of the electricity will be sold to Eversource and 19.6 percent will be sold to UI. Is that based on energy (i.e. MWh) or capacity (i.e. MW) or both?
5. What are the lengths of the PPAs? Are there provisions for any extension of time in the PPAs? Is there an option to renew?
6. At what alternating current (AC) megawatt (MW) output are the PPAs based on? Is the proposed AC MW of the facility fixed at a certain amount per the PPAs and/or either RFP? Is there an option within the PPAs to allow for changes in the total output of the facility based on unforeseen circumstances?
7. If the PPAs expire and are not renewed and the solar facility has not reached the end of its lifespan, will the Petitioner decommission the facility or seek other revenue mechanisms for the power produced by the facility?
8. Would the petitioner participate in the ISO-NE Forward Capacity Auction? If yes, which auction(s) and capacity commitment period(s)?

Proposed Site

9. Page 6 of the Petition references "in June 2017, the DOA filed a notice in the Town of Enfield Land Records indicating other parcels owned by Jarmoc Farms are part of the Connecticut Farmland Preservation Program" and a map depicting the parcels is provided in Exhibit C.
 - a) Were the development rights acquired prior to June 2017, but a deed wasn't recorded until June 2017 or were the development rights acquired for these parcels in conjunction with project development consultations with DOA?
 - b) How many total acres are the other parcels for which the development rights were conveyed to DOA?
 - c) Do the other parcels contain Prime Farmland Soils?

10. Where is the nearest national, state-designated, and/or local historic area from the proposed site? Describe the visibility of the proposed project from the nearby historic area(s).
11. Page 6 of the Petition notes that the western portion of the project site is currently used for tobacco and gourd crops. Page 6 of the Environmental Site Conditions Report notes that about 70 acres is currently cleared and actively managed for agricultural operations. Is it used by the property owner, or is it leased to a third party?
12. Page 31 of the Petition notes that approximately 1.27 acres of Statewide Important Farmland Soils and approximately 2.44 acres of Prime Farmland Soils would be disturbed by the proposed project. This is due to the "installation of site roads, equipment pads, and the collector substation." Does this also include post drilling, or would that be a negligible portion of the disturbed areas?
13. Provide the distance, direction and address of the nearest off-site residence from the solar field perimeter fence.

Energy Production

14. The proposed project is 19.6 megawatts (MW) alternating current (AC). Provide the MW DC of the proposed project. How many solar modules would be installed? According to the specifications sheet of the proposed solar modules, the wattage of each module ranges from about 345 W DC to 355 W DC. What is the estimated watts DC of a proposed solar module?
15. Have electrical loss assumptions been factored in to the output of the facility? What is the output (MW AC) at the point of interconnection?
16. Explain why a solar panel orientation to the south with an angle at 25 degrees above the horizontal was selected for this facility. Is the project designed to maximize annual energy production or peak load shaving?
17. What is the projected capacity factor (expressed as a percentage) for the proposed project?
18. What is the efficiency of the photovoltaic module technology of the proposed project?
19. Would the power output of the solar panels decline as the panels age? If so, estimate the percent per year.
20. Is the project being designed to accommodate the potential for a 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 PPAs.
21. Would the impact of soft shading, such as air pollution or hard shading, such as bird droppings or weather events, such as snow or ice accumulation, hail, dust, pollen, etc. reduce the energy production of the proposed project? If so, was this included in the proposed projects capacity factor? Would any of these expose the solar panels to damage?
22. If applicable, what type of methods would be employed to clear the panels of the bird droppings, prey shells, ice accumulation, hail, dust or pollen and at what intervals?

23. Could the project be designed to serve as a microgrid?
24. Should one section of the solar array experience electrical problems such that the section shuts down, could other sections of the system still operate and transmit power to the grid?

Site Components and Solar Equipment

25. Would the proposed solar panels be mounted in a portrait or landscape fashion?
26. Reference Figure 7 – Proposed Conditions. Roughly how many MW AC is the western array, and how many is the eastern array?
27. Provide the dimensions for the transformer and inverter pads.
28. Were string inverters considered for this project? If so, what factors led the current design of several large inverters rather than the use of string inverters?
29. What type of solar panel mounts are proposed? What is the design wind speed of the solar panel mount? How are the panels adhered to the mount? What prevents the solar panels from separating from either the racking or the foundation during high winds?
30. Would wiring for the solar panels be attached to the racking? If wiring is external, are there any concerns regarding damages related to weather, vegetation maintenance, animals?
31. Drawing C-042 depicts a 15-foot aisle width between the rows of solar panels. Would the aisle width be consistently 15 feet for the entire project?

Interconnection

32. If the proposed project is approved, does Nutmeg expect that Eversource would file a separate Petition for a Declaratory Ruling with the Council for the roughly 500-foot underground cable and equipment and modifications at the existing Scitico Substation (to accommodate the interconnection)?
33. Is the project listed on the October 2018 ISO-NE Regional System Plan Project List (ISO-NE RSP Project List)? If so, what is the project identification number? How does the projected in-service date in the ISO-NE RSP Project List compare with the Petitioner's proposed in-service date as noted on page 10 of the Petition?
34. Would any of the power produced be used on-site (identify use), or would it all be fed into the transmission system? If any of the power would be used on-site, estimate the total on-site load in kilowatts.
35. Would the 34.5-kV feeders that would connect to the Petitioner's on-site collector substation be underground? If the feeders would be overhead, estimate the pole height and the approximate number of poles required.
36. Page 7 says the proposed on-site collector substation would be impervious. Would it have a crushed stone base?

Public Safety

37. Would the solar facility have a protection system to shut the facility down in the event of a fault within the facility or isolate the facility during abnormal grid disturbances or during other power outage events?
38. Would the project comply with the National Electrical Code and the National Electrical Safety Code, as applicable?
39. With regard to fencing noted on page 10 of the Petition:
 - a. Is it correct to say that only the perimeter fence would have the six inch wildlife gap at the bottom and the substation fence and agricultural fence would not?
 - b. Of the three fence types (perimeter, substation and agricultural), which would have anti-climb measures?
40. Referencing the Revised Acoustical Analysis under Tab Q of the Petition. The analysis takes into account 12 proposed inverters and the 34.5-kV/115-kV generator step-up transformer at the substation. However, page 8 of the Petition notes that up to 14 inverters would be installed and each would be paired with a medium-voltage transformer. Have the medium-voltage transformers been taken into account in the acoustical study, or would they not materially affect the results? As proposed, would there be 12 inverter/transformer pairs, with a possible maximum of 14? Explain.
41. Would sun reflection off of the panels create a glare effect at any abutting residences? If yes, what measures can be employed to reduce potential glare (ex. Solid fencing, landscaping)?
42. Tab R of the Petition includes the "Project Extent Corner Locations Figure" and the FAA Determinations of No Hazard letters. How were for the four locations chosen for FAA review purposes?
43. Would the proximity of any existing or proposed outbuildings, structures, relocated barns, etc. present a fire safety or other hazard (ex. Lightning strike)? Would the proximity of any existing or proposed outbuildings, structures, etc. present a hazard in relation to the electric generating equipment?
44. With regard to emergency response:
 - a. 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?
 - b. Page 20 of the Petition notes that, "All disconnect switches will be cleared marked for use in an emergency." Would first responders have access to the disconnect switches and the ability to shut the entire facility down in an emergency via the disconnect switches? Explain.

Environmental

45. Using the EPA Greenhouse Gas Equivalencies Calculator, please provide an EPA Greenhouse Gas Equivalency Analysis for the proposed project. <https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator>.

46. Under Connecticut General Statutes §16-50k, "Core forest" means unfragmented forest land that is three hundred feet or greater from the boundary between forest land and nonforest land, as determined by the Commissioner of Energy and Environmental Protection." Would any tree clearing occur within core forest? If so, how many acres? How would tree clearing affect the acreage of core forest and core forest edge? Provide an aerial photograph that depicts pre- and post-construction acreage of core and edge forest.
47. Tab I of the Petition contains the Photo Rendering Locations map and associated photo-simulations. Has the Petitioner considered vegetative screening in the vicinity of Photo Rendering Location No. 2, known as "West of Broad Brook Road looking northeast?"
48. Neglecting any equipment inside the proposed on-site collector substation, would the tallest equipment at the site be the medium voltage transformers of 7 to 8 feet high, as noted on page 8 of the Petition?
49. Within the proposed on-site collector substation, would the tallest structure be a terminal structure or transition structure? If yes, provide an estimate of its height.
50. Did the Petitioner conduct a Shade Study Analysis? Would shading present any challenges for the proposed project? If so, how many trees will be removed to mitigate for shading? How were the limits of tree shading determined? Will stumps be left in place in these areas?
51. What effect would runoff from the drip edge of each row of solar panels have on the site drainage patterns? Would channelization below the drip edge be expected? If not, why not?
52. Provide the distance from the proposed project to the nearest wetland. Also provide the distance from the proposed project to the nearest watercourse.
53. Referencing pages 31 and 32 of the Petition, vegetative cutting would be performed within the vernal pool Critical Terrestrial Habitat for vegetation capable of exceeding a 20 to 40-foot canopy height limit. Was this canopy height limit established due to shading concerns?
54. What is the host municipality's setback regulation from wetlands?
55. What is the length of the posts and to what depth would the posts be driven (or spun) into the ground to provide structural stability? Are any impacts to groundwater quality anticipated? If so, how would the petitioner manage and/or mitigate these impacts?
56. Would glare from the solar panels attract birds (ex. Appear as water) and create a collision hazard?

Facility Construction

57. Would the Petitioner apply for a highway encroachment permit from Connecticut Department of Transportation, as applicable, for any work performed within a state highway right-of-way?
58. Has the petitioner submitted an application for a General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities from the Department of Energy and Environmental Protection? If yes, on which date was it filed?

59. Page 2-7 of the Storm Water Management Report states that, "The berms are designed to infiltrate the 100-year storm event and are equipped with an emergency spillway." Drawings C-025, C-031 and C-036 and others show various emergency spillways. Thus, is it correct to say that a storm event greater than the 100-year event would overflow the berms and end up with water cascading over the berms? If yes, where would the water go, and what could be the potential negative impacts? Are detention basins then needed, or would that be determined upon consultation with DEEP?
60. With regard to earthwork required to developed the site, provide the following:
- Will the site be graded? If so, in what areas?
 - What is the desired slope within the solar array areas?
 - Could the solar field areas be installed with minimal alteration to existing slopes?
 - If minimal alteration of slopes are proposed, can existing vegetation be marinated to provide ground cover during construction?
 - Estimate the amounts of cut and fill in cubic yards for the access road(s)
 - Estimate the amounts of cut and fill in cubic yards for solar field grading.
 - If there is excess cut, will this material be removed from the site property or deposited on the site property?
61. Why is a post-construction road width of 16 feet required for most of the project area (except for the substation location)? What is the minimum road width required for post-construction use?
62. Has a comprehensive geotechnical study been completed for the site to determine if site 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?
63. Page 8 of the Petition describes multiple methods to install the posts into the ground, e.g. using a pile driver, drill, vibratory hammer, or spinning ground screws into the ground. Would the choice of methods be determined by the results of a geotechnical study? If a geotechnical study has been performed, provide an update on the methods to install the posts/screws into the ground. In the event that ledge is encountered, what methods would be utilized for installation?
64. Will blasting be required to install any site infrastructure? If not, what methods would be used if bedrock is encountered?
65. What is the anticipated sequence of construction? During what time of year would each sequence ideally occur? Does this account for possible seasonal construction restrictions due to the presence of protected species?
66. Page 10 of the Petition notes that, if the proposed project is approved, the final construction hours would be included in the Development and Management Plan. Does Nutmeg know tentatively what the construction hours and days of the week (e.g. Monday through Friday 8 AM to 5 PM) would be?

Maintenance Questions

67. Does the proposed capacity factor and annual megawatt-hours of energy output take into account snow accumulation on the solar panels?
68. Has any analysis been conducted to determine structural limits of snow accumulation on the solar panels and steel support structures, assuming heavy, wet snow and or ice? Would there be circumstances that would require snow/ice removal to prevent damage to the panels/rack system?

69. Page 3 of the Petition details the Array Cleaning Procedure. Would this maintenance activity have any impacts to water quality?
70. How does the developer intend to promote and maintain grasses or other ground cover beneath the panels and within the solar array rows? Would bare ground areas or patchy growth increase site runoff?
71. Would the petitioner store any replacement modules on-site in the event solar panels are damaged by hail, prey shells or other impact hazards? If so, where? How would damaged panels be detected?
72. Could the solar panels be recycled? If so, how?