



# STATE OF CONNECTICUT

## CONNECTICUT SITING COUNCIL

Ten Franklin Square, New Britain, CT 06051

Phone: (860) 827-2935 Fax: (860) 827-2950

E-Mail: [siting.council@ct.gov](mailto:siting.council@ct.gov)

[www.ct.gov/csc](http://www.ct.gov/csc)

### VIA ELECTRONIC MAIL

August 7, 2017

Paul R. Michaud, Esq.  
Murtha Cullina, LLP  
185 Asylum Street  
Hartford, CT 06103

RE: **PETITION NO. 1312** – Candlewood Solar LLC petition for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need is required for the proposed construction, maintenance and operation of a 20 megawatt AC (26.5 megawatt DC) solar photovoltaic electric generating facility located on a 163 acre parcel at 197 Candlewood Mountain Road and associated electrical interconnection to Eversource Energy's Rocky River Substation on Kent Road in New Milford, Connecticut.

Dear Attorney Michaud:

The Connecticut Siting Council (Council) requests your responses to the enclosed questions no later than August 28, 2017. 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.

Yours very truly,

Melanie A. Bachman  
Executive Director

MB/MP/lm

c: James J. Walker, Vice President, Ameresco, Inc.  
Joel S. Lindsay, Director, Ameresco, Inc.  
Council Members

**Petition No. 1312  
Interrogatories  
Set One  
August 7, 2017**

**Project Development**

1. When was Candlewood Solar LLC's (CS or Petitioner) proposed project submitted as a proposal for the Tri-State Clean Energy RFP? When was the proposed project selected?
2. Was CS' Power Purchase Agreement (PPA) approved by PURA? When? Are there provisions for any extension of time in the PPA?
3. What is the length of the PPA? Is there an option to renew?

**Proposed Site**

4. What are the existing land uses in each direction from the proposed site, e.g. north, south, east, and west?
5. Has the State of Connecticut Department of Agriculture purchased any development rights for the proposed site as part of the State Program for the Preservation of Agricultural Land?
6. Is any portion of the site currently in productive agricultural use? If so, how many acres and is it used by the property owner or is it leased to a third party? Could the project qualify under the Agricultural Virtual Net Metering Program or other agriculturally-friendly renewable energy program?
7. Does the proposed site contain any Connecticut Prime Farmland and/or Important Agricultural Soils? If so, what acreage of prime and important soils would the facility and associated equipment be located on?
8. Is there any environmental contamination on the proposed site from any previous agricultural use or other land use disturbance (ex. Soil and/or water contamination)? If so, how would the Petitioner remediate the pre-existing soil and/or water contamination?
9. Is the site parcel, or any portion thereof, part of the Public Act 490 Program? If so, how does the town land use code classify the parcel(s)? For example, is/are the parcel(s) classified as "Tillable D – good to fair"?
10. Have any residential subdivisions or other land use plans been approved by the town for the site in the past? If so, please submit the approved plans. If not, could a residential subdivision or other land use plan be constructed at the site? If so, please provide an overlay map depicting the details of a potential residential subdivision or other land use plan for the site using maximum development potential allowed by the town's zoning regulations.

11. Where is the nearest recreational area from the proposed site? Describe the visibility of the proposed project from nearby recreational areas.
12. Is Candlewood Lake considered a recreational resource? If yes, is it public or private? What, if any, recreational uses is Candlewood Lake used for?
13. On pages 24 through 31 of the Environmental Assessment, CS provided photo-simulations, including two in the vicinity of Candlewood Lake. Would the proposed solar facility and/or the 13.8-kV distribution poles be visible from any portion of Candlewood Lake?
14. Where is the nearest area of archaeological sensitivity from the proposed site? Describe the visibility of the proposed project from nearby archaeological areas.
15. To date, has CS received a response from the State Historic Preservation Office (SHPO), based on its submission of a Project Review Cover Form? If yes, provide a copy of such correspondence.
16. Page 22 of the Environmental Assessment notes that, "The closest residence is located approximately 400 feet to the west of the Project Area on Candlewood Mountain Road." What is the address of such off-site residence?

### **Energy Production**

17. On page 19 of ISO-New England, Inc.'s (ISO-NE) Final 2017 Solar PV Forecast, ISO-NE utilizes an AC MW to DC MW (AC/DC Ratio) of 0.83. Is it correct to say that the actual AC/DC Ratio can vary from one solar PV project to the next? Is it correct to say that the AC/DC Ratio of the proposed project is approximately 0.75? Generally, which design considerations were used to determine the AC/DC Ratio of the proposed project?
18. Explain why a solar panel orientation to the south with an angle at 15 degrees above the horizontal was selected for this facility. Is the project designed to maximize annual energy production or peak load shaving?
19. What is the efficiency of the photovoltaic module technology of the proposed project?
20. Is a battery or other type of energy storage system proposed? If yes, describe the function of lithium-ion battery or other type of storage system. What prediction methods and reports has CS used to assess total capacity and annual energy production in kilowatt-hours for this project, and how are the proposed batteries or other type of energy storage incorporated into those predictions? Are the batteries or other type of energy storage used to "even out" the energy production, charging during the day and discharging at night, or are they charged during off-peak hours to grant more output during peak hours? Are they simply used to function as a power supply backup?
21. Would the impact of bird droppings, bird feeding habits (ex. Dropping food items such as clams or other prey on the solar panels) or weather events (ex. Snow or ice accumulation, hail, dust, pollen, etc.) reduce the energy production of the proposed project? If so, approximately how much and for how long? Would any of these expose the solar panels to ballistic or other damage? If applicable, what type of methods would be employed to clear the panels of the bird droppings, prey shells, snow and ice accumulation, hail, dust or pollen?

22. Would voltage and current be impacted by soft shading of the solar panels, such as air pollution, or hard shading of the solar panels, such as an accumulated solid? If so, would energy production be reduced?
23. Under Tab C of the Environmental Assessment, the Petitioner has included the Payment in Lieu of Tax Agreement (PILOT Agreement) dated February 17, 2017 between the Petitioner, the Town of New Milford (Town) and New Milford Clean Power, LLC. Under Schedule B of the PILOT Agreement and also on page 20 of the Petition, the Petitioner would submit a Decommission Plan to the Council to provide for the removal of the solar facility within 180 days when solar energy use of the facility ends or the PILOT Agreement ends, whichever is later. Under Tab 6 of the Petition, by letter dated June 9, 2017, Mayor Gronbach of the Town notes that the Petitioner would submit a Decommission Plan to the Council to provide for the removal of the solar facility within 90 days when solar energy use of the facility ends or the PILOT Agreement ends, whichever is later. Please clarify whenever the Decommission Plan would go into effect 90 or 180 days of when solar energy use of the facility ends and/or the PILOT Agreement ends.

### **Site Components and Solar Equipment**

24. Provide the approximate dimensions for the transformers and inverters, including the heights.
25. What is the design wind speed of the solar panels with the fixed screw post foundations? What prevents the solar panels from separating from either the racking or the foundation during high winds?
26. Reference Sheet E-101 under Tab 2 of the Petition. What is the total length of all of the proposed access roads combined in miles?
27. What is the color of the solar panels? Are other colors available? Is the glass casing reflective? Are there solar panels available with non-reflective glass? If so, what are the costs and benefits of each type?

### **Interconnection**

28. What, if any, upgrades would be necessary at Rocky River Substation (RRSS) in order to accommodate the interconnection of the proposed project? If substation upgrades are required, would that be a separate petition filing to the Council from Eversource?
29. Is the project listed on the most recent ISO New England, Inc. (ISO-NE) Regional System Plan Project List? If so, what is the project identification number? Or is this not applicable because it is a distribution-level connection to RRSS, rather than a transmission connection?
30. Would all of the power produced go to the grid or would any be for internal use? Would the power produced by the project be used regionally, locally or both?
31. Approximately how tall would the 13.8-kV distribution poles to be installed between the proposed project and RRSS be? Approximately how many poles would be installed? Would the 13.8-kV electrical connection run overhead to cross Route 7 (Kent Road) to reach RRSS, or would it be an underground connection "trenched" under Route 7 to reach RRSS? Provide a drawing or sample picture of one of the proposed distribution poles.

32. Page 15 of the Environmental Assessment refers to the "...completion of the distribution and transmission level impact studies in progress." Is a system impact study being performed by Eversource or ISO-NE or both? Explain. What is the status of such system impact studies?
33. If applicable, since the proposed project would connect to the 13.8-kV side of the electric system, but within a substation with existing transmission, would CS have to obtain a determination of no significant adverse impact to the transmission system from the ISO-NE Reliability Committee? If yes, please submit a copy of such determination letter. If no, approximately when is a determination anticipated?

### Public Safety

34. Would the solar plant have a protection system to shut the plant down in the event of a fault within the facility or isolate the facility during abnormal grid disturbances or during other power outage events?
35. Would the project comply with the National Electrical Code, the National Electrical Safety Code and any applicable National Fire Protection Association codes and standards?
36. Would the proposed project fence utilize an anti-climb design? Has CS considered having an approximately 6-inch gap between the bottom of the facility fence and grade to prevent wildlife, e.g. turtles from being trapped within the gap?
37. Would the inverters be "staged" such that only the minimum required number would be on at a given time depending on solar power production, or, generally, would all 8 inverters be operating at the same time?
38. In the context of the Connecticut Department of Energy and Environmental Protection (DEEP) Noise Control Standards, which class of emitter does CS consider the proposed project, e.g. Class A, B, or C? Which classes of receptors, e.g. Class A, B, or C about subject property?
39. What would be the projected worst-case noise level in dBA at the nearest receptor? Would the proposed project meet the applicable DEEP Noise Control Standards at the property boundaries?
40. Would glare from the panels present a problem for any nearby properties? Can plantings be used to buffer the visibility of and/or glare from the solar arrays?
41. Would glare from the solar panels attract birds (ex. appear as water) and create a collision hazard?
42. Did the Petitioner conduct a Shade Study Analysis? Would shading present any challenges for the proposed project? Is most of the tree clearing to accommodate the project itself, or is some percentage of the tree clearing (e.g. to the south) associated with minimizing shading of the panels? Explain.
43. Is Candlelight Farms Airport the nearest airport and/or airfield? Page 32 of the Environmental Assessment notes that the proposed facility would be approximately 0.5 miles from Candlewood Farms Airport. Provide the direction of Candlewood Farms Airport from its closest point on the proposed project footprint.



44. Would a crane be required for any portion of construction? If yes, would that necessitate construction notice to Federal Aviation Administration for the height(s) of such temporary crane equipment?
45. Would the proximity of any existing or proposed outbuildings, structures, 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?
46. Is outreach and/or training necessary to local emergency responders in the event of a fire or other emergency at the site? How would site access be ensured for emergency responders? 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?

### Environmental

47. Under Tab F, according to the the U.S. Environmental Protection Agency (EPA) Greenhouse Gas Equivalencies calculator, the energy produced will be sufficient to offset approximately 23,894 metric tons of carbon dioxide (equivalent) each year. Was that calculation based on the 34,000,000 kWh AC? Does CS agree that it is appropriate to utilize kWh AC for this analysis because only AC power can flow into the grid, displace traditional grid generation and result in carbon emissions reductions? If necessary, recalculate the Tab F Greenhouse Gas Equivalencies using kWh AC.
48. Provide the carbon debt payback period. Specifically, EPA estimates that 1.06 metric tons of carbon dioxide are sequestered by one acre of average U.S. forest in one year. That number can be multiplied by the number of acres of trees to be cleared to estimate the annual loss of carbon dioxide sequestration in metric tons per year for the project. Then the total projected annual electrical production in kWh AC for the solar facility can be multiplied by the EPA estimate of  $7.03 \times 10^{-4}$  metric tons of carbon dioxide displaced per kilowatt-hour in order to provide the annual carbon dioxide emissions avoided by the operation of solar plant. Based on this or a different analysis, compute the number of months or years it would take to “break even” with carbon dioxide or when the carbon dioxide emissions reductions would equal the sequestration loss. (Data source: <http://www.epa.gov/energy/ghg-equivalencies-calculator-calculations-and-references>)
49. To date, has CS received a response from DEEP regarding its review of the Natural Diversity Database? If yes, provide a copy of such correspondence?
50. Provide the total tree clearing area in upland areas and the total tree clearing area in wetland areas, if applicable.
51. If applicable, how would clearing in wetland areas, e.g. in the proposed 13.8-kV interconnection corridor be performed? For example, would wetland vegetation be trimmed short as shrubs and tree stumps would be left in place? Or would wetland vegetation be completely cleared? Would CS re-seed such wetland areas with a native New England wetland seed mix for restoration purposes?
52. Does CS have an invasive species control plan to reduce the risk of invasive species becoming established in disturbed wetland areas? If yes, provide a copy of such plan.
53. Based on the February 1, 2016 DEEP Map entitled “Northern long-eared bat (NLEB) areas of concern in Connecticut to assist with Federal Endangered Species Act Compliance,” there may be known NLEB hibernacula in New Milford. Would any of the proposed tree clearing occur with 0.25 miles of a known NLEB hibernaculum? (It is not necessary to identify the location of the hibernaculum, only the approximate distance.)

54. What is the closest distance from the proposed solar facility fence line to a wetland, and where is it located? What is the closest distance from the proposed fence line to a watercourse, and where is it located?
55. Is it correct to say that the proposed project would not be located within a DEEP-designated aquifer protection area (APA)? How far away (distance and direction) is the nearest APA from the proposed project? Are there any wells on the site or in the vicinity of the site? If so, how would the Petitioner protect the wells and/or water quality from construction impacts?
56. Would the proposed project adversely impact groundwater that is classified by DEEP as GA?
57. Does Candlewood Lake supply water to operate the Rocky River Hydroelectric facility?
58. Page 4 of the Environmental Assessment notes that, "The remainder of the parcel where the Facility will be located is also identified as Zone X, defined as areas determined to be outside the 500-year floodplain." Is this area (outside of the 500-year flood zone) considered the "unshaded" Zone X as defined by the Federal Emergency Management Agency? And are the flood zone areas in the Rocky River corridor considered "shaded" Zone X?
59. Would the solar panels "heat" rainwater and potentially thermally pollute wetlands?
60. What percentage, if any, of the 100-foot to 750-foot Critical Terrestrial Habitat (CTH) around the vernal pool is currently cleared/developed? Or if there no existing clearing, and therefore, post-construction, the cleared percent area would be about 23.3 percent of the CTH?
61. What is the length of the posts and to what depth would the screw posts be driven into the ground to provide structural stability? Are any impacts to groundwater anticipated? If so, how would the Petitioner manage and/or mitigate these impacts?

#### **Construction Questions**

62. If applicable, could tree clearing, grubbing, grading, excavation, filling and dewatering, be performed in stages (e.g. five acres at a time)? Why or why not? (Note: Connecticut Department of Energy and Environmental Protection "DEEP" General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities states that, "Whenever possible, the site shall be phased to avoid the disturbance of over five acres at a time...")
63. Will grading be required? If so, is it possible to install the facility with minimal alteration to existing slopes? If not, could existing vegetation be maintained/managed?
64. Estimate the amounts of cut and fill in cubic yards for a) access roads and b) general site grading, if applicable.
65. How would the vertical screw posts (that would support the solar arrays) be driven into the ground to a sufficiently shallow depth to avoid ledge? In the event that ledge is encountered, what methods would be utilized (ex. mechanical chipping or blasting) or would relocation of the posts be utilized instead of chipping or blasting?
66. 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?

67. Provide a project schedule with estimated commencement and completion dates. Also include the proposed construction hours and days of the week, e.g. Monday through Saturday 7:00 a.m. to 5:00 p.m. Is it possible that some Sunday construction hours might be necessary due to unforeseen conditions such as inclement weather, transmission outage constraints and/or critical path activities? If the project is approved, could the final construction hours be included in the Development and Management Plan?
68. Would a Construction General Permit from DEEP, or other type of permit, be required?
69. Would the stormwater design be installed in phases to control stormwater flows onto adjacent properties during construction?
70. Has the Petitioner considered provisions to handle stormwater during/following a rain event during construction? Are temporary swales and/or basins proposed?
71. Would the proposed site access from Candlewood Mountain Road also serve as construction access?

### **Maintenance Questions**

72. How would the Petitioner handle potential snow accumulation on the panels and any effects of blocking the sunlight?
73. 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? What accumulation of snow could the structures handle? Would the Petitioner clear snow from the panels when it approached the limit?
74. Would the Petitioner adhere to any seasonal restrictions on mowing due to the presence of protected species?
75. Would the installed solar panels require regular cleaning or other, similar, maintenance? How would this be accomplished? Would this maintenance activity have any impacts to water quality?
76. What are the impacts of the grass on erosion? Would the site be hydro-seeded?
77. How would the 13.8-kV interconnection route be vegetated? Would grass be planted and require mowing, or would it be left to naturally re-vegetate?
78. Could the Petitioner establish post-construction site restoration/revegetation that includes the incorporation of model pollinator habitat?
79. How would the proposed project impact traffic? Specifically, about how many construction vehicles per day would be expected to visit the site during construction? Once the facility is operational, estimate the number and frequency of vehicles visiting the site for operation and maintenance.