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| <p>PETITION NO. 1310 - Quinebaug 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 50 megawatt AC solar photovoltaic electric generating facility on approximately 561 acres comprised of 29 separate and abutting privately-owned parcels located generally north of Wauregan Road in Canterbury, Connecticut and south of Rukstela Road and Allen Hill Road in Brooklyn, Connecticut.</p> | <p>} Connecticut } Siting } Council</p> | <p>December 7, 2017</p> |
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Findings of Fact

Introduction

1. On June 15, 2017, Quinebaug Solar, LLC (QS or Petitioner) pursuant to Connecticut General Statutes (C.G.S.) §16-50k and §4-176, submitted a petition (Petition) to the Connecticut Siting Council (Council) for a declaratory ruling that no Certificate of Environmental Compatibility and Public Need (Certificate) is required for the construction, maintenance, and operation of a 50 megawatt (MW) alternating current (AC) solar photovoltaic electric generating facility on approximately 561 acres comprised of 29 separate and abutting privately-owned parcels located generally north of Wauregan Road in Canterbury, Connecticut and south of Rukstela Road and Allen Hill Road in Brooklyn, Connecticut. (QS 1, pp. 1-1 and 3-3)
2. QS is an independent electrical generating entity participating in the ISO New England, Inc. (ISO-NE) market, selling power to existing distribution and transmission utility companies. QS is not an electric distribution company nor does QS provide electricity directly to retail customers. (QS, 1, p. 2-1)
3. QS is a Delaware Limited Liability Company, wholly owned by NextEra Energy Resources, LLC (NEER), a subsidiary of NextEra Energy, Inc., with headquarters at 700 Universe Blvd., Juno Beach, Florida. QS was previously an affiliate of Ranger Solar, LLC (Ranger Solar) of Yarmouth, Maine. Ranger Solar was acquired by NEER in early 2017. (QS 1, p. 2-1)
4. The parties in this proceeding are QS and Troy & Meghan Sposato (collectively “the Sposatos”). (Transcript 1, September 19, 2017, 3:00 p.m. [Tr. 1], pp. 5-7)
5. Pursuant to Regulations of Connecticut State Agencies (RCSA) §16-50j-40, notice of the Petition was provided to all abutting property owners by certified mail on or about June 8, 2017. (QS 1, p. 5-1 and Tab G)
6. QS provided notice to all federal, state and local officials and agencies listed in RCSA §16-50j-40. (QS 1, p. 5-1 and Tab H)
7. The proposed project would generate renewable electrical energy from solar power. Solar power is considered a Class I resource. (QS 1, p. 3-1; C.G.S. § 16-1(a)(20))
8. The proposed project would be a “grid-side distributed resources” facility under C.G.S. § 16-1(a)(37). (QS 1, p. 7-1; C.G.S. § 16-1(a)(37))
9. QS would sell power to electric distribution companies of Connecticut, Massachusetts and Rhode Island pursuant to its selection under the New England Clean Energy Request for Proposals. (QS 1, p. 3-1)

10. The State legislature established a renewable energy policy under C.G.S. §16a-35k that encourages the development of renewable energy facilities to the maximum extent possible. (C.G.S. § 16a-35k)
11. The Council is required to approve the project by a declaratory ruling as long as the project meets Department of Energy and Environmental Protection (DEEP) air and water quality standards. (C.G.S. § 16-50k(a))

Procedural Matters

12. Upon receipt of the Petition, on June 16, 2017, the Council sent a letter to the Towns of Brooklyn and Canterbury as notification that the Petition was received and is being processed in accordance with C.G.S. §16-50k(a). Notice was also provided to the Town of Plainfield because it is located within 2,500 feet of the proposed site. (Council correspondence dated June 16, 2017)
13. During a regular Council meeting held on July 20, 2017, the Petition was deemed complete pursuant to RCSA §16-50j-39a, and in its discretion under C.G.S. §4-176, the Council voted to hold a public hearing on the Petition. A public hearing schedule was also approved by the Council. (Record)
14. Pursuant to C.G.S §16-50m, the Council published legal notice of the date and time of the public hearing in The Norwich Bulletin on July 26, 2017. (Record)
15. On August 8, 2017, the Council held a pre-hearing conference on procedural matters for parties and intervenors to discuss the requirements for pre-filed testimony, exhibit lists, administrative notice lists, expected witness lists, filing of pre-hearing interrogatories and the logistics of the public inspection of the site scheduled for September 19, 2017 at the office of the Council, 10 Franklin Square, New Britain, Connecticut. The Petitioner and Meghan Sposato (by phone) were the only participants. (CSC Pre-Hearing Conference Memoranda, dated August 1, 2017 and August 9, 2017).
16. Pursuant to R.C.S.A § 16-50j-21, on September 1, 2017, QS erected a total of four signs adjacent to the proposed project: two along Rukstella Road and two along Wauregan Road. The signs presented information including the project name, Petitioner name, date of Council public hearing, and contact information for the Council. (QS 4; QS 5, response 78)
17. The Council and its staff conducted a public inspection of the proposed site on September 19, 2017, beginning at 1:30 p.m. (Council Hearing Notice dated July 24, 2017; QS 4)
18. Pursuant to C.G.S. § 16-50m, the Council, after giving due notice thereof, held a public hearing on September 19, 2017, beginning with the evidentiary session of the hearing at 3:00 p.m. and continuing with the public comment session at 6:30 p.m. at the Brooklyn Community Center, Main Road, 31 Tiffany Street, Brooklyn, Connecticut. (Council's Hearing Notice dated July 24, 2017; Tr. 1, p. 1; Transcript 2 – 6:30 p.m. [Tr. 2], p. 1)
19. The evidentiary hearing session was continued on October 17, 2017 at 11:00 a.m. at the office of the Council, 10 Franklin Square, New Britain, Connecticut. (Transcript 10/17/17, 11:00 a.m., [Tr. 3], p. 1)

Municipal Consultation and Community Outreach

20. Since January 2015, QS and its local representatives have met with the Towns of Brooklyn and Canterbury with respect to the proposed project. (QS 1, p. 5-1)

21. For a nine month period beginning in July 2016, QS made an effort to notify and meet with all abutting property owners. (QS 1, p. 5-1)
22. Of the 50 abutting property owners, QS received letters of support from 13. Of the others, some were not opposed to the project, some were opposed, and some requested additional visual screening. (QS 1, Tab F – Abutter Notification; QS 3, response 1; Tr. 1, pp. 13-14)
23. QS held a public information session in the Town of Brooklyn on January 26, 2017. (QS 1, p. 5-1 and Tab F)
24. QS held a public information session in the Town of Canterbury on February 7, 2017. (QS 1, p. 5-1 and Tab F)
25. QS has worked with the Town of Brooklyn on a tax stabilization agreement plan. (Tr. 1, p. 14)
26. By letter dated June 19, 2017, First Selectman Roy A. Piper of the Town of Canterbury expressed his support for the proposed project noting the production of clean energy, jobs and as well as the anticipated state and local tax revenues. (Letter from First Selectman Piper dated June 19, 2017)
27. By letter dated September 19, 2017, the Town of Brooklyn Planning and Zoning Commission (Brooklyn PZC) provided comments, including, but not limited to, the following:
 - a) Expressing concern for the preservation of the scenic view from Route 169, a federally-designated National Scenic Byway and state-designated Scenic Road;
 - b) Expressing concern regarding the visual impacts on residentially-developed neighborhoods such as Almada Drive and requesting that such impacts be eliminated or minimized;
 - c) Requesting depiction of existing stone walls, preserving as many of the walls as possible, and retaining and stockpiling stones on-site where wall removal is necessary;
 - d) Expressing concern regarding the proposed project's impact on Cold Spring Brook in terms of stormwater runoff quality and temperature and how it may impact this wild trout stream;
 - e) Recommending that the perimeter fence be evaluated for its ability to allow wildlife to pass;
 - f) Requesting that consideration be given to the possibility of future agricultural uses on the property that could serve as a creative solution to allow agriculture to co-exist with the proposed solar project;
 - g) Requesting additional vegetative screening as required due to existing trees being deciduous and the use of native evergreen species; and
 - h) Requesting that the use of any segment of Rukstella Road, particularly the unpaved portions, be kept to a minimum during the construction phase.(Brooklyn PZC Letter dated September 19, 2017)
28. By letter dated October 16, 2017, the Town of Brooklyn Inland Wetlands and Watercourses Commission (Brooklyn IWWC) provided comments, including, but not limited to, the following:
 - a) Endorsing the recommendations made by DEEP regarding stormwater management and requesting that such recommendations be implemented in full. See section in this document titled “State Agency Comments”;
 - b) Requesting that the Petitioner ensure that the proposed project not interfere with the restoration of the former sand and gravel excavation operation;
 - c) Requesting that any wood chips produced during land clearing be made available to River Junction Estates, Jeff Rawson, or other responsible parties to provide organic matter that may be utilized in restoration;
 - d) Requesting that the Petitioner take steps to prevent an increase in water temperature and turbidity, including the pre-development baseline surveys and ongoing monitoring;

- e) Requesting, to the greatest possible extent, the installation of fencing that allows both small and large animal migration through the site. Fencing that is not continuous around the site perimeter should be considered; and
 - f) Requesting that soils in agricultural areas be evaluated for pesticide contamination prior to development. If contamination is found, the management of said soils should be compliant with DEEP regulations and best management practices.
(Brooklyn IWWC Letter dated October 16, 2017)
29. At the September 19, 2017 public comment session, First Selectman Richard Ives of the Town of Brooklyn gave a limited appearance statement. First Selectman Ives noted that the Town of Brooklyn was first contacted by Ranger Solar in mid-2016. Since then, a tax stabilization agreement has been worked on, and such agreement has been approved. (Tr. 2, pp. 7-8)
30. QS has not received any comments from the Town of Plainfield. (Tr. 1, p. 14)
31. State Representative Mike Alberts of the 50st District expressed his support for the proposed project. (QS 1, Tab H)
32. C.G.S. § 22a-20a and DEEP’s Environmental Justice Guidelines require applicants seeking a permit from DEEP or the Council for a new or expanded facility defined as an “affecting facility” that is proposed to be located in an environmental justice community to file an Environmental Justice Public Participation Plan (EJPPP). The proposed solar facility is not an “affecting facility” under C.G.S. §22a-20a because it uses non-emitting and non-polluting renewable resources. Thus, Environmental Justice does not apply to the facility and an EJPPP is not required. (QS 1, p. 1-1; QS 5, response 79; C.G.S. § 22a-20a)

State Agency Comments

33. Pursuant to R.C.S.A. §16-50j-40, on June 26, 2017 and on July 24, 2017, the following state agencies were requested to submit written comments regarding the proposed facility: Department of Energy and Environmental Protection (DEEP); Department of Agriculture (DOAg); Department of Public Health (DPH); Council on Environmental Quality (CEQ); Public Utilities Regulatory Authority (PURA); Office of Policy and Management (OPM); Department of Economic and Community Development (DECD); Department of Emergency Services and Public Protection (DESPP); Department of Consumer Protection (DCP); Department of Labor (DOL); Department of Construction Services (DCS); Department of Transportation (DOT); the Connecticut Airport Authority (CAA); and the State Historic Preservation Office (SHPO). (Council Hearing Package, dated July 24, 2017)
34. On July 17, 2017, the Council received comments from the DOAg, including, but not limited to, the following:
- a) DOAg believes that the proposed project would convert approximately 275 acres of Prime and Important Farmland Soils to a 50 MW solar photovoltaic facility;
 - b) Prime and Important Farmland Soils are recognized federal, state and locally significant natural resources, and through adoption of Public Act 17-218, the legislature has formally acknowledged the importance of such resources. See FOF #270 and #271;
 - c) With considerable competition for agricultural land in Connecticut, the loss of highly productive farmland would exacerbate farmers’ challenges to utilize quality farmland;
 - d) The loss of Connecticut farms impacts efforts to combat food insecurity, results in food importation and increases the distance required to transport food, thus increasing the carbon footprint;

- e) The proposed project is incompatible with the goals of the State of Connecticut to keep agriculture viable and growing, protect farmland, improve land use planning and increase agriculturally-based economic development and investment through grants and programs;
- f) In addition to taking agricultural lands out of production in the near term, the development of large solar facilities would damage soil resources and have long term impacts on the agricultural productivity potential;
- g) DOAg disagrees with the Petitioner’s assertion that the proposed large solar array is a better land use than other development;
- h) DOAg disagrees with the Petitioner that soil health would be better protected by a solar array and that the current agriculture and management would remain unchanged, and DOAg asserts that agricultural activities would provide substantially better soil health and ecosystem benefits over the proposed solar project;
- i) The necessary information for minimizing soil impacts during construction and the necessary soil baseline information to develop a restoration plan should the facility be decommissioned, has not been included. Baseline soil testing should be performed; and
- j) The impacts from the use of heavy equipment and facility installation were not fully explored.

(DOAg Letter received July 17, 2017)

35. On September 6, 2017, the Council received a response from the DOT’s Bureau of Engineering and Construction indicating that DOT had no comments. (DOT Letter dated September 5, 2017)

36. On September 14, 2017, the Council received comments from the DEEP, including, but not limited to, the following:

- a) The proposed project would require an individual National Pollutant Discharge Elimination System discharge permit from DEEP, or QS may be eligible to register under DEEP’s General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (General Permit);
- b) To address stormwater concerns and related permitting issues, DEEP has developed additional direction to project proponents, and such measures have been included as listed in FOF #37;
- c) A preliminary assessment letter from DEEP regarding the Natural Diversity Database dated October 7, 2016 was provided to the Petitioner with a list of State-designated species that could potentially occur at the proposed site;
- d) While the Petitioner has undertaken an acoustic survey for bats, the survey results have not been provided to DEEP as of September 14, 2017;
- e) The construction and operation of the proposed solar facility would not be expected to impact the Quinebaug River Wildlife Management Area (QRWMA) unit located southeast of Wauregan Road, nor on the operation of the Quinebaug Fish Hatchery also located to the southeast of the proposed project; and

(DEEP Letter dated September 14, 2017)

37. On September 14, 2017, DEEP provided a recommendation document titled, “Stormwater Management at Solar Farm Construction Projects” and dated September 8, 2017 that it recommends be incorporated into a Stormwater Pollution Control Plan (SWPCP) for the proposed project. Such recommendations are listed below:

- a) Ensure that only a Professional Engineer and/or Landscape Architect serve as the (DEEP) Commissioner’s agent to inspect the site and serve as the qualified inspector (Authorized Professional) for the purposes of the general permit;
- b) Ensure that the Authorized Professional prepare a proposed inspection checklist assure that the construction project is being conducted in compliance with the terms and conditions of the General Permit, and the SWPCP is implemented in accordance with the General Permit;

- c) Ensure that the credentials for the Authorized Professional proposed by the (General Permit) Applicant and the proposed inspection checklist be submitted for the review and approval of the Commissioner and be included with the registration application for the General Permit;
- d) Ensure that the Authorized Professional personally perform all pre-construction, construction and post-construction site inspections; perform inspections at the end of any storm event (whether or not such storm generates a discharge); and prepare and submit all inspection reports including the supporting inspection checklists in compliance with the General Permit;
- e) Ensure that the Authorized Professional report any violations of the terms and conditions of the General Permit or the SWPCP to the Commissioner's designee within two hour of becoming aware of such violation, or at the start of the next business day if outside normal business hours;
- f) Within five days of such violation, the Authorized Professional shall prepare and submit a signed and stamped written report, which documents the cause of the violation, during including dates and times, and corrective action taken or planned to prevent future occurrences;
- g) Ensure that if circumstances necessitate a revision to the SWPCP, the Authorized Professional works with the Permittee's design professional to ensure compliance with the terms and conditions of the General Permit, and any such change to the SWPCP shall be submitted for review and written approval of the Commissioner; and
- h) Ensure that the Authorized Professional reviews all stormwater monitoring reports to evaluate the effectiveness of the SWPCP and to document any adverse impacts that any stormwater controls on the construction site or discharges on the construction site may have on wetlands, streams, or any other receiving waterbodies. Such evaluation shall be documented in the inspection reports and inspection checklists performed in accordance with the General Permit.

(DEEP Stormwater Recommendations received September 14, 2017)

- 38. While the Council is obligated to consult with and solicit comments from state agencies by statute, the Council is not required to abide by the comments from state agencies. (Council Administrative Notice Item No. 98)
- 39. The following agencies did not respond to the Council's request for comment on the proposed facility: DPH, CEQ, PURA, OPM, DECD, DESPP, DCP, DOL, DCS, CAA, and SHPO. (Record)

New England Regional System Planning

- 40. New England's electric power grid has been planned and operated as a unified system of transmission owners and market participants. The New England system integrates resources with the transmission system to serve all regional load regardless of state boundaries. Therefore, electrical performance in one part of the system affects all areas of the system. (Council Administrative Notice Item No. 24 – 2015 ISO-NE Regional System Plan, pp. 25-26)
- 41. Created in 1997, ISO-NE is the independent, not-for-profit corporation responsible for the reliable operation of New England's electric power generation and transmission system, overseeing and ensuring the fair administration of the region's wholesale electricity markets, and managing comprehensive regional electric power planning. (Council Administrative Notice Item No. 32 – ISO FCA #10 Press Release dated February 29, 2016, p. 2)

42. ISO-NE’s primary responsibility is electric reliability. ISO-NE is fuel and technology neutral and takes no position on any proposed energy projects. ISO-NE does not own any transmission or distribution lines or power plants. (Council Administrative Notice Item No. 35 – ISO-NE State of the Grid Presentation dated January 30, 2017, pp. 5-6)
43. The physical power from the proposed facility would be delivered to the ISO-NE grid via a transmission connection. (Tr. 1, p. 14)
44. On November 5, 2015, ISO-NE issued the 2015 Regional System Plan (2015 RSP) to identify the New England region’s electricity needs and plans for meeting these needs for 2015 through 2024. (Council Administrative Notice Item No. 24 – 2015 RSP, p. i)
45. ISO-NE holds an annual auction to acquire the power system resources needed to meet future demand for the New England region. The annual Forward Capacity Market Auction (FCA) is held approximately three years before each capacity commitment period to provide time for new resources to be developed. Capacity resources can include traditional power generation, renewable generation, or demand-side resources, such as load management and energy efficiency measures. Resources clearing in the auction will receive a monthly payment during the delivery year in exchange for their commitment to provide power or curtail demand when called on by ISO-NE. (Council Administrative Notice Item No. 32 – ISO FCA #10 Press Release dated February 29, 2016, pp. 1-2)
46. ISO-NE computes and annually updates an installed capacity requirement (ICR) for the New England Region. ICR is a measure of the installed resources that are projected to be necessary to meet both ISO-NE’s and the Northeast Power Coordinating Council’s (NPCC) reliability standards, with respect to satisfying the peak load forecast for the New England Balancing Authority while maintaining required reserve capacity. (Council Administrative Notice Item No. 31 - ISO-NE ICR Report dated January 2016, p. 9)

Generating Capacity Retirements in New England

47. ISO-NE identifies the following power plants as “closed” or “retiring.”

| Power Plant | Fuel | Summer Capacity | Status |
|------------------------|--------------|------------------------|--|
| Vermont Yankee | Nuclear | 604 MW | Closed |
| Mount Tom | Coal | 146 MW | Closed |
| Salem Harbor | Coal and Oil | 750 MW | Closed |
| Pilgrim | Nuclear | 702 MW | Retiring by May 2019 |
| Brayton Point Nos. 1-4 | Coal and Oil | 1,493 MW | Projected to retire on or about May 2017 |
| Norwalk | Oil | 342 MW | Closed |
| Total | | 4,037 MW | |

(Council Administrative Notice Item No. 26 – 2015 CELT Report, pp. 2.1.3, 5.1.7, and 5.1.8; Council Administrative Notice Item No. 35 – ISO-NE State of the Grid Presentation dated January 30, 2017, p. 12; Council Administrative Notice Item No. 30 – ISO-NE 2017 Regional Electricity Outlook, pp. 27-28; Council Administrative Notice Item No. 24 – 2015 RSP, p. 95; Tr. 3, p. 170)

48. The 2017 Regional Electricity Outlook (2017 REO) identifies the roughly 6,000 MW as “at risk for retirement in coming years” and referred to these resources in a table as “hypothetical” retirements in the 2025 through 2030 timeframe. These “at risk” power plants are listed below. (Council Administrative Notice Item No. 30 – ISO-NE 2017 REO, pp. 27-28)

| Power Plant | Fuel | Summer Capacity |
|---------------------------|-----------------|------------------------|
| Yarmouth Nos. 1-4 | Oil | 811 MW |
| Merrimack No. 1-2 | Coal | 436 MW |
| Newington No. 1 | Oil/Natural Gas | 400 MW |
| Schiller Nos. 4&6 | Coal | 95 MW |
| Mystic No. 7*** | Natural Gas/Oil | 575 MW |
| Canal No. 1-2 | Oil | 1,121 MW |
| West Springfield No. 3*** | Natural Gas/Oil | 94 MW |
| Middletown Nos. 2-4* | Oil/Natural Gas | 744 MW |
| Montville Nos. 5-6** | Oil/Natural Gas | 467 MW |
| New Haven Harbor | Oil/Natural Gas | 447 MW |
| Bridgeport Harbor No. 3 | Coal | 383 MW |
| Total | | 5,573 MW |

*Middletown No. 4 is oil-fired only. Middletown Nos. 2 and 3 are oil/natural gas.

**Montville No. 5 is oil/natural gas. Montville No. 6 is oil-fired only.

***While primarily fueled by natural gas, these are steam turbine units.

(Council Administrative Notice Item No. 29 – ISO-NE 2016 Regional Electricity Outlook, p. 11; Council Administrative Notice Item No. 30 – ISO-NE 2017 Regional Electricity Outlook, pp. 27-28; Council Administrative Notice Item No. 26 – ISO-NE 2015 CELT Report, pp. 2.1.12, 2.1.13, 2.1.16, 2.1.43, 2.1.44, 2.1.48, and 2.1.49)

QS’ Participation in ISO-NE’s Forward Capacity Market Auction

49. QS submitted a request to qualify and participate in the FCA in accordance with its power purchase agreement (PPA). QS is taking all necessary and appropriate actions to qualify and participate, as well as commercially reasonable actions to be selected and compensated, in the FCA and QS would do so in every auction year for the duration of the Project’s PPA. See section of this document titled “Power Purchase Agreement.” (QS 5, response 85)
50. On September 29, 2017, ISO-NE notified QS that it has partially qualified with the upcoming FCA for the capacity commitment period of 2021 through 2022 based on approximately 28.7 MW of summer capacity. This is less than the 50 MW nameplate capacity of the project because ISO-NE uses a percentage of the project’s nameplate capacity for solar projects due to its weather-dependent nature. (QS 5, response 85; Tr. 3, p. 14; Council Administrative Notice Item No. 29 – ISO-NE 2016 Regional Electricity Outlook, p. 34)

Regional Collaboration Among the New England States

51. In September 2013, the Governors of the six New England states in the ISO-NE region entered into a commitment to advance a regional energy infrastructure initiative that diversifies the region’s energy supply portfolio while ensuring that the benefits and costs of investments are shared appropriately among the New England states. (Council Administrative Notice Item No. 44)

52. In April 2015, the Governors of the six New England states in the ISO-NE region convened a Northeast Forum on Regional Energy Solutions focused on energy infrastructure challenges and regional collaboration to support energy infrastructure solutions, and reaffirmed their commitment to work together toward a cleaner, more reliable and more affordable energy future. The Governors released a six-state action plan that includes, but is not limited to, continuing to invest in energy efficiency and distributed generation, utilizing existing authority to procure clean energy generation and transmission, and securing and utilizing state authority to find solutions to infrastructure challenges. (Council Admin Notice Item No. 45; Council Administrative Notice Item No. 46)
53. Two types of standards are generally used to implement policy objectives in the electric power sector: Renewable Portfolio Standards (RPS) and Clean Energy Standards. Both standards have a requirement that regulated utilities or others providing certain services to consumers must either buy the desirable environmental attributes of certain power generation sources or pay a fee. (Council Administrative Notice Item No. 46)
54. A renewable energy certificate (REC) certifies that one megawatt-hour (MWh) of renewable electrical energy has been generated. RECs create a market to separate renewable energy attributes and resource output. Environmental attributes are sold into the REC markets. (Council Administrative Notice Item No. 46; Council Administrative Notice Item No. 72 - 2014 IRP, Appendix D)

State of Connecticut Planning and Energy Policy

55. PA 11-80 was the legislation that restructured the Department of Environmental Protection as the Department of Energy and Environmental Protection. Section 51 of PA 11-80 requires that DEEP prepare a Comprehensive Energy Strategy (CES) every three years that reflects the legislative findings and policy stated in C.G.S. §16a-35k. As such, this statute consolidated Connecticut's energy planning for the first time. The final version of the state's inaugural CES was published on February 19, 2013 (2013 CES). It advocated smaller, more diversified generation projects using renewable fuels, as well as smaller, more innovative transmission projects emphasizing reliability. (Council Administrative Notice Item No. 49 – Council 2014/2015 Forecast Report, pp. 48-49; Council Administrative Notice Item No. 70 – 2013 CES; C.G.S. §16a-3d)
56. Biennially, DEEP, in consultation with the electric distribution companies, is required to prepare an energy and capacity resource assessment that includes:
 - a) The energy and capacity requirements of customers for the next three, five and ten years;
 - b) The manner of how best to eliminate growth in electric demand;
 - c) How best to level electric demand in the state by reducing peak demand and shifting demand to off-peak periods;
 - d) The impact of current and projected environmental standards, including, but not limited to, those related to greenhouse gas emissions and how different resource could help achieve those standards and goals;
 - e) Energy security and economic risks associated with potential energy resources; and
 - f) The estimated lifetime cost and availability of potential energy sources.(C.G.S. §16a-3a)
57. Resource needs are required to first be met through all available energy efficiency and demand reduction resources that are cost-effective, reliable and feasible. (§16a-3a)

58. Pursuant to C.G.S. §16a-3a, DEEP, in consultation with the electric distribution companies, is required to review the state's energy and capacity resource assessment and approve the Integrated Resource Plan (IRP) for the procurement of energy resource, including, but not limited to, conventional and renewable generating facilities, energy efficiency, load management, demand response, combined heat and power facilities, distributed generation and other emerging energy technologies to meet the projected requirements of customers in a manner that minimizes the cost of all energy resources to customers over time and maximizes customer benefits consistent with the state's environmental goals and standards. The goal of the IRP is to lower the rates and cost of electricity. (C.G.S. §16a-3a)
59. The IRP is required to consider approaches to maximizing the impact of demand-side measures; the extent to which generation needs can be met by renewable and combined heat and power facilities; optimization of the use of generation sites and generation portfolio existing in the state; fuel types, diversity, availability, firmness of supply and security and environmental impacts thereof, including impacts on meeting the state's greenhouse gas emission goals; reliability, peak load and energy forecasts, system contingencies and existing resource availabilities; import limitations and the appropriate reliance on such imports; the impact of the IRP on the costs of electric consumers; and the effects on participants and non-participants. (§16a-3a)
60. Annually, the procurement manager of the PURA, in consultation with each electric distribution company, shall develop a plan for the procurement of electric generation services and related wholesale electricity market products to enable the electric distribution companies to manage a portfolio of contracts to reduce the average cost of standard service while maintaining cost volatility within reasonable levels. The Procurement Plan shall provide for the competitive solicitation, including contracts for generation or other electricity market products and financial contracts and an explanation of why such purchases are in the best interest of ratepayers. (C.G.S. §16-244m)
61. From time to time, in accordance with the IRP and the Procurement Plan, DEEP shall initiate a generation evaluation and procurement process if it is determined to be in the best interests of Connecticut customers. The evaluation process entails a nonbinding prequalification process to identify potentially eligible new generators. Generators shall demonstrate how they will reduce electrical rates for Connecticut ratepayers while maintaining or improving reliability, improving environmental characteristics of the Connecticut generation fleet and providing economic benefit to Connecticut. (C.G.S. §16-244m)
62. Determination of generator eligibility is based on a showing of project attributes, including, but not limited to, ratepayer, environmental and economic benefits, as well as a demonstration of reasonable certainty of completion of development. If a determination of eligibility is made by DEEP, it shall issue a request for proposals. (C.G.S. §16-244m)

Connecticut's Renewable Portfolio Standards

63. RPS requirements are stimulating the need for and the development of renewable energy resources and energy efficiency in the region, which reduce emissions. States typically develop RPS to facilitate the development of new renewable energy sources with the goals of stabilizing long-term energy prices, enhancing environmental quality and creating jobs. RPS targets are designed to achieve a certain level of renewable energy penetration, typically in proportion to total electricity sales. (Council Administrative Notice Item No. 24 - 2015 RSP, p. 12; Council Administrative Notice Item No. 46 – NESCOE)

64. C.G.S. §16-245a establishes Connecticut’s RPS. Connecticut RPS requirements call for 20 percent of Connecticut’s electricity usage to come from Class I renewable resources by 2020, which is higher than Class I targets in Massachusetts and Rhode Island. (Council Administrative Notice Item No. 49 – Council 2014/2015 Forecast Report, p. 42; Council Administrative Notice Item 38 – Tri-State Clean Energy RFP, p. 7; Council Administrative Notice Item 42, MA Renewable Energy Portfolio Standard; Council Administrative Notice 43, RI Renewable Energy Standard)
65. RECs provide additional revenue to qualifying renewable resources in proportion to the energy each resource generates. RECs create a market that reveals the additional price required, beyond energy and capacity payments, to make projects economically viable and also identifies when there is a need for additional resources. The REC-based compliance feature is designed to use competitive market forces to identify the appropriate level of economic support to achieve the policy goals. (Council Administrative Notice 46 – NESCOE)
66. Connecticut electric utilities that do not obtain the required number of RECs are required to pay an Alternative Compliance Payment (ACP). According to DEEP’s 2014 Integrated Resources Plan (2014 IRP), for Class I renewable energy in Connecticut, the ACP is \$55 per MWh. (Council Administrative Notice Item No. 72 - 2014 IRP, Appendix D, pp. D-3 and D-4)
67. The 2014 IRP projects that Connecticut will face a shortage of Class I renewable resources starting in 2015. Beginning in 2017, the region as a whole will face shortages of Class I renewables unless additional supply is procured or otherwise added to the market. (Council Administrative Notice Item No. 72 - 2014 IRP, p. iv)
68. To meet Connecticut’s RPS goals, the 2013 CES estimates that meeting the 2020 RPS would require the development of 6,196 gigawatt-hours (GWh) or nearly 3 gigawatts (GW) of low carbon supply. (QS 1, p. 4-1)

Connecticut’s Global Warming Solutions Act and Climate Change Preparedness Plan

69. The Global Warming Solutions Act (Public Act 08-98) sets a goal of reducing greenhouse gas (GHG) emissions by 80 percent by 2050. (QS 1, p. 4-1; C.G.S. §22a-200)
70. According to the Governor’s Commission on Climate Change (GC3), overall statewide emissions are 10.6% below 1990 levels. In 2016, the GC3 built four mitigation scenarios:
 - a) The Pilgrim Nuclear Plant retires and is replaced with natural gas. The remaining 3 regional nuclear plants continue to operate through 2050. The grid evolves toward zero-carbon with utility-scale solar as the dominant resource;
 - b) All nuclear plants retire at the end of their current license periods and are replaced with natural gas. The grid evolves toward zero-carbon with utility-scale solar as the dominant resource;
 - c) All nuclear plants retire at the end of their current license periods and are replaced with on-shore wind. The grid evolves toward zero-carbon with roughly an even split between on-shore wind and utility-scale solar; and
 - d) Scenario 1 with accelerated early deployment of mitigation technologies and measures, such as greater levels of energy efficiency to significantly reduce load. (Council Administrative Notice Item No. 76 – GC3)

71. Section 7 of Public Act 08-98 required the Governor’s Steering Committee on Climate Change to establish an Adaptation Subcommittee to evaluate the projected impacts of climate change on Connecticut agriculture, infrastructure, natural resources and public health and develop strategies to mitigate these impacts. (Council Administrative Notice Item No. 86 – Climate Change Preparedness Plan)
72. Adaptation strategies for agriculture, infrastructure and natural resources include, but are not limited to, best management practices to ensure water recharge, sustainable water capture and storage and water reuse guidelines for industry; research, monitoring and education to analyze competing demands on Connecticut water quantity and quality to develop new approaches while supporting multiple and conflicting needs; and policy, legislation, regulation and funding to protect critical soil landscapes, adopt a water hierarchy and encourage collaboration with other states and federal agencies. (Council Administrative Notice Item No. 86 – Climate Change Preparedness Plan)

DEEP Competitive Energy Procurements

73. On December 9, 2011, pursuant to Section 127 of PA 11-80, DEEP issued notice for a Request for Proposals (RFP) for 30 MW of zero emission Class I renewable energy sources. On December 23, 2011, DEEP issued its final determination in the RFP and selected 2 out of 21 proposed projects to enter into long-term power purchase agreements with the electric distribution companies (EDCs). The 2 projects selected were the 5 MW East Lyme Solar Park in East Lyme, Connecticut and the 5 MW Somers Solar Center in Somers, Connecticut that DEEP found will serve the long term interests of ratepayers. (Council Administrative Notice Item Nos. 54 and 55; Connecticut Public Act 11-80).
74. On July 8, 2013, pursuant to Section 6 of PA 13-303, DEEP issued notice for a RFP for Class I renewable energy resources. On September 26, 2013, DEEP issued its final determination in the RFP and selected 2 out of 47 proposed projects to enter into long-term power purchase agreements with the EDCs for a combination of energy and environmental attributes. The 2 projects selected were the 250 MW Number Nine Wind Farm in Aroostook County, Maine and the 20 MW Fusion Solar Center in Sprague, Connecticut that DEEP found to be in the interest of ratepayers, consistent with the requirements to reduce greenhouse gas emissions and in accordance with the policy goals of the CES. (Council Administrative Notice Item No. 56; Public Act 13-303)
75. On October 8, 2013, pursuant to Section 8 of PA 13-303, DEEP issued notice for a RFP for run-of-the-river hydropower, landfill methane gas and biomass Class I renewable energy resources. On January 31, 2014, DEEP issued its final determination in the RFP and selected 3 out of 28 proposed projects to enter into long-term power purchase agreements with the EDCs for a combination of energy and environmental attributes. The 3 projects selected were a 21.5 MW portion of an existing 43 MW biomass facility located in New Hampshire, a 5.4 MW portion of an existing 54 MW biomass facility located in Vermont and a 2.7 MW portion of an existing 54 MW biomass facility located in Vermont.(PA 13-303)

76. On November 12, 2015, pursuant to Section 1(c) of PA 15-107 and Sections 6 and 7 of PA 13-303, DEEP issued notice for a RFP, in coordination with Rhode Island and Massachusetts, for Class I renewable energy sources (Tri-State RFP). Project selection occurred on October 25, 2016. On June 27, 2017, DEEP issued its final determination in the RFP and selected 9 out of 31 proposed projects to enter into long-term power purchase agreements with the EDCs for a combination of energy and environmental attributes. The 9 projects selected were as follows:
- a) 21 MW Antrim Wind Project in New Hampshire;
 - b) 49 MW Sanford Solar Project in Maine;
 - c) 49 MW Chinook Solar Project in New Hampshire;
 - d) 49 MW Quinebaug Solar Project in Connecticut (the subject of this Petition);
 - e) 49 MW Farmington Solar Project in Maine;
 - f) 20 MW Enfield Solar Project in Connecticut;
 - g) 126 MW Cassadaga Wind Project in New York;
 - h) 20 MW Woods Hill Solar Project in Connecticut;
 - i) 20 MW Hope-Scituate Solar Project in Rhode Island.
- (Council Administrative Notice Item No. 38 - Tri-State RFP)
77. On March 9, 2016, pursuant to Section 1(b) and 1(c) of PA 15-107, DEEP issued notice for a RFP for Class I renewable energy sources and Class III sources with a nameplate capacity rating of more than 2 MW and less than 20 MW (Small Scale RFP). Project selection occurred on November 28, 2016. On June 27, 2017, DEEP issued its final determination in the RFP and selected 25 out of 107 proposed projects to enter into long-term power purchase agreements with the EDCs for a combination of energy and environmental attributes. The 25 projects selected were as follows:
- a) 15 MW Pawcatuck Solar Center in Connecticut;
 - b) 19.99 MW Hecate Energy Solar Greene County Project in New York;
 - c) 6 MW Swantown Road Solar Project in Connecticut;
 - d) 5 MW Holiday Hill Community Wind Project in Massachusetts;
 - e) 19.99 MW Hecate Energy Solar Albany County Project in New York;
 - f) 19.80 MW Litchfield Solar Plant and Park in Connecticut;
 - g) 5 MW Kidder Hill Community Wind Project in Vermont;
 - h) 17.50 MW Swanton Wind Project in Vermont;
 - i) Incremental Energy Efficiency in Connecticut;
 - j) 10 MW North Stonington Solar Plant in Connecticut;
 - k) 14.69 MW W. Portsmouth St. Solar Project in New Hampshire;
 - l) 19.59 MW Constitution Solar Project in Connecticut;
 - m) 19.60 MW Highgate Solar Project in Vermont;
 - n) 19.58 MW Hinckley Solar Project in Maine;
 - o) 19.58 MW Randolph Center Solar Project in Vermont;
 - p) 19.63 MW Sheldon Solar Project in Vermont;
 - q) 19.58 MW Winslow Solar Project in Maine;
 - r) 19.58 MW Davenport Solar Project in Vermont;
 - s) 19.60 MW Nutmeg Solar Project in Connecticut;
 - t) 4.98 MW GRE-15-North Haven-CT Solar Project in Connecticut;
 - u) 19.99 MW Wallingford Renewable Energy Solar Project in Connecticut;
 - v) 3.50 MW Wind Colebrook South Project in Connecticut;
 - w) 12.50 MW Minuteman Wind Project in Massachusetts;
 - x) 17.73 MW GRE-29-Waterford-CT Solar Project in Connecticut;
 - y) 19.59 MW Coolidge Solar I Project in Vermont.
- (Council Administrative Notice Item No. 75)

Power Purchase Agreement

78. QS has a contract, known as a power purchase agreement (PPA), to sell the electricity that would be generated by the proposed project to various utilities. The percentages of the electricity to be sold to each utility are listed below.

| Connecticut Utilities | Percentage |
|---|-------------------|
| Eversource | 40.18 |
| United Illuminating | 9.82 |
| Massachusetts/Rhode Island Utilities | |
| Eversource/NSTAR | 18.84 |
| Eversource/WMECO | 3.28 |
| National Grid | 19.98 |
| Unitil | 0.4 |
| National Grid/Narragansett Electric | 7.5 |
| Total | 100 |

(QS 3, response 3)

79. Under QS’ PPA, the RECs and electrical energy are sold to the utilities in a bundled package. (Tr. 1, p. 84)

80. The PPA was filed with PURA for review on or about August 25, 2017. The PPA was approved by PURA on September 13, 2017. There are no provisions for extending the PPA beyond its 20-year term. (QS 3, response 3; Tr. 1, p. 10)

81. After the 20-year term, the Petitioner could obtain another PPA from another entity, or the same entities, or it could act as a merchant generator. (Tr. 1, p. 84)

Public Benefit

82. A public benefit exists when a facility is necessary for the reliability of the electric power supply of the state or for the development of a competitive market for electricity. (Conn. Gen. Stat. §16-50p(c))

83. Public Act 05-1, An Act Concerning Energy Independence, established a rebuttable presumption that there is a public benefit for electric generating facilities selected by the Department of Public Utility Control (DPUC, now known as PURA) in a Request for Proposals. (Public Act 05-1)

Project Alternatives

84. QS investigated alternative site parcels within Connecticut that were greater than 50 acres in size and located within one mile of existing electrical transmission infrastructure that is typically 115-kV. (Tr. 3, p. 8-9)

85. QS also investigated brownfield sites, but brownfield sites are typically not large enough to host projects of this size, and they are often not found in as close proximity to electrical infrastructure as the proposed site. (Tr. 3, p. 9)

86. The proposed site is the only site QS was able to secure that had both willing landowners and close proximity to existing electrical infrastructure. (Tr. 3, p. 9)
87. In its July 17, 2017 letter to the Council, DOAg suggested a “cluster development” with rooftop solar on a portion of the property with the remaining farmland, forestland and wetlands protected with a conservation easement might be a more preferable alternative. (DOAg letter received July 17, 2017)
88. The property could be developed for any permitted use. A “clustered development” is not proposed by the property owner or QS. (QS 2)

Site

89. The proposed site is generally bounded by Wauregan Road to the south in Canterbury, Blackwell/Cold Spring Brook to the west, Rukstella Road, Allen Hill Road and forested areas to the north in Brooklyn, and the Quinebaug River to the east (QS 1, p. 3-3)
90. QS has secured the land via an Option to Lease. (QS 1, p. 3-1)
91. Of the 29 separate and abutting parcels that comprise the approximately 561-acre proposed site, 27 of the parcels are owned by River Junction Estates, LLC (RJE). One parcel is owned by Founders Bee Property and Investments, and one parcel is owned by Canterbury Sand and Gravel, LLC. (QS 1, pp. 1-1 and 3-3)
92. The proposed site consists of gently rolling hills, large level areas, and a few moderately to steeply sloping areas that currently contain a combination of previously developed areas, overgrown former pasture lands, early successional woodlands, invasive species, open gravel mines, and agricultural fields. Existing access traverses the entire area for the proposed project. (QS 1, p. 3-3)
93. Land uses to the south of the proposed site include gravel mining, residential development, forested undeveloped land, and agriculture. The Quinebaug River and the DEEP Quinebaug Valley Trout Hatchery are located to the southeast. Immediately to the east of the proposed site is undeveloped forested land. Farther to the east along Christian Hill and Maynard Road, the current land use is residential. Land uses to the north of the proposed site include agricultural land, forested undeveloped land, and single-family residential uses. Land uses to the west of the proposed site include gravel mining (to the northwest), forested undeveloped land, and agriculture. (QS 3, response 5)
94. The subject properties in the Town of Brooklyn are located in the Residential-Agricultural (RA) Zone. (QS 1, p. 3-3)
95. The subject properties in the Town of Canterbury are located in the Rural District (RD) Zone. (QS 1, p. 3-3)

96. At the time RJE acquired the subject parcels, RJE approached the Town of Brooklyn to establish a recreation development district, which was approved. This district was created in order to permit the construction of a golf course and 182 housing units on the property. Additionally, lands near Wauregan Road in Canterbury and Brooklyn were acquired, and a portion of the property was intended to be used as a point of ingress to the golf course. RJE created a 15-lot subdivision north of Wauregan Road, which was approved by the Town, and the remainder of the property was used for gravel extraction. These developments were deemed economically unviable at the time because of the housing market decline in the 2000s. Consequently, the owner solicited solar developers to lease the property. Under current market conditions, however, there has been substantial interest in developing the property for residential housing. As no golf course exists today, QS believes that those development plans were abandoned by RJE. (QS 1, p. 3-3; QS 3, response 11)
97. The project footprint is comprised of 198 acres of unmanaged forest, 179 acres of agricultural fields, 50 acres of wetlands and open water, 10 acres of open space and low intensity development, and 7 acres of shrub/scrub. There is also a gravel extraction operation within the area. (QS 1, Tab L, p. 3)
98. The closest off-site residences in Brooklyn to the proposed project perimeter fence are four residential parcels located on a gravel road accessed via Allen Hill Road. Each parcel is located approximately 100 feet away from the proposed facility perimeter fence. (QS 3, response 15)
99. The closest off-site residences in Canterbury to the proposed project perimeter fence are located at 265 and 267 Wauregan Road at distance of approximately 88 feet from the edge of the residential structures to the proposed facility perimeter fence. (QS 3, response 16)
100. The Sposatos' residence at 192 Wauregan Road in Canterbury is located approximately 55 feet west of the limits of construction of the existing southern access (to be improved) that is located off of Wauregan Road. (QS 1, Tab C, Sheet C-051)

Project Description

101. The proposed project consists of a solar photovoltaic facility consisting of approximately 191,000 fixed solar panels at approximately 340 Watts direct current (DC) each, for a total of approximately 65 MW DC. (QS 1, p. 3-5; QS 3, response 21)
102. The proposed solar panels would be installed in linear arrays on racking systems generally in an east-west orientation with the panels facing the south. The panels would be oriented at an angle of approximately 25 degrees above the horizontal. (QS 1, p. 3-5)
103. There would be an approximately 15-foot wide aisle between solar racking systems. This would be the minimum spacing distance to minimize shading and allow for maintenance. See Figure 3. (QS 1, Tab C, Sheet G-001, Solar Racking System Detail; Tr. 3, p. 18)
104. Electricity from the panel arrays would be transmitted to the centralized inverter locations via underground DC collector lines. (QS 1, p. 3-5)
105. There would be up to 21 inverters to convert the DC power produced by the solar panels to AC power. The AC voltage would be boosted to 34.5 kilovolts (kV) by transformers located next to the inverters. Inverter and transformer skids would be placed on poured concrete foundations or on driven pile foundations. The inverters and transformers would reach a height of approximately seven to eight feet. (QS 1, p. 3-5; QS 3, response 26)

106. The inverter/transformer stations would be connected to the Project Transformer located in the Utility Substation. Underground AC circuits for such connections would be utilized where possible. If overhead lines are used in some areas, the structures would be approximately 40 feet to 50 feet tall. See Section of this document titled “Utility Substation.” (QS 1, p. 3-5; QS 5, response 89)
107. The total AC power output of the project would be approximately 50 MW or roughly 49.4 to 49.6 MW at the point of interconnection, taking into account losses. See section titled of this document “Electrical Interconnection.” (QS 1, p. 1-1; Tr. 3, pp. 162-163)
108. No energy storage system is proposed at this time. (QS 3, response 22; Tr. 3, p. 177)
109. The ground beneath the solar arrays would be planted with fescue species. The aisles would be planted with a low-growing solar array mix. (QS 1, p. 3-6)
110. The top of the solar arrays would reach a height of approximately seven feet. The bottom of the solar arrays would be located approximately 20 inches above grade. (QS 1, Tab C, Sheet G-001, Solar Racking System Detail)
111. The proposed facility would be surrounded by a seven-foot tall chain link fence without an anti-climb design. A six-inch gap between grade and the bottom of the fence would be provided for wildlife passage. (QS 1, Tab C – Sheet G-002; QS 3, response 38)
112. A series of gravel access roads would be constructed within the proposed project development area to provide access to the arrays, Project Transformer and inverter/transformer stations. QS would utilize existing access to the extent practicable. The proposed access roads would be approximately 15 feet wide and a total of 3.37 miles in length. Such access would be comprised of an improved subgrade and approximately six inches of processed gravel placed above existing grades. (QS 1, pp. 3-5 and 3-6)
113. The Petitioner claims that the project has been designed to comply with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control*. (QS 1, Tab N, p. 3-1)
114. The Petitioner claims that the project has been designed to comply with the *2004 Connecticut Stormwater Quality Manual*. (QS 1, Tab N, p. 3-1)
115. The Petitioner believes that it has minimized the land area necessary to achieve its electrical capacity target. (Tr. 3, p. 22)
116. QS has a commitment to a (just under) 50 MW capacity target under its PPA as well as under its selection in the Tri-State RFP. Regarding the possibility of decreasing the physical size and capacity (MW) of the project to increase wetland buffers beyond 50 feet, reduce Critical Terrestrial Habitat development, and avoid incidental take of the eastern spadefoot toad and blue-spotted salamander, QS believes that the proposed project is the best that it can achieve based on its commitment. (Tr. 3, pp. 11-13)
117. The total estimated cost of the project would be at least \$50,000,000. This would include both QS’ and Eversource’s equipment. (QS 1, p. 3-7; Tr. 1, p. 28-29)

Utility Substation

118. The proposed utility substation (Utility Substation) would be located south of Wauregan Road and directly east of the existing Eversource 115-kV electric transmission line right-of-way (ROW). (QS 1, p. 3-5 and Tab C – Sheet C-108)
119. The Utility Substation would be approximately 175 feet by 218 feet or 38,150 square feet, based on the preliminary design. The base of the substation would be gravel. (QS 5, response 87; QS 1, Tab 3 – Sheet C-108)
120. The Utility Substation would include a 34.5-kV to 115-kV transformer known as the Project Transformer and a three-breaker ring bus. (QS 1, p. 3-5)
121. The proposed substation would have an eight foot tall fence with an additional 1-foot of barbed wire on top in accordance with National Electrical Code (NEC) requirements. (QS 3, response 38)
122. QS has provided two 16-foot wide gravel access road alternatives (off of Wauregan Road) for the proposed Utility Substation. Option A would be located west of the Utility Substation, and Option B would be located to the east of the Utility Substation. See Figure 2. (QS 1, Tab 3, Sheet C-108)
123. The point of change of ownership (from QS to Eversource) is anticipated to be the 115-kV side of the Project Transformer. Eversource would own the 115-kV portion of the project. (Tr. 1, pp. 27-28)
124. Eversource's equipment including the transmission interconnection is part of the proposed Petition and not expected to be filed as a separate Petition for a Declaratory Ruling. If the proposed project is approved, the final details would be provided in the D&M Plan. (Tr. 1, p. 28)

Electrical Interconnection

125. The existing Eversource transmission line ROW contains a single row of double-circuit 115-kV structures. Eversource would connect the proposed project to the western-most circuit, i.e. closer to the Utility Substation. (QS 5, response 86)
126. As of August 22, 2017, the electric transmission System Impact Study has been completed, and the Interconnection Agreement between the Petitioner, ISO-NE and Eversource is currently in draft form. (QS 3, response 34)
127. The ISO-NE Transmission and Stability Task Forces have recommended that the ISO-NE Reliability Committee (Reliability Committee) issue a finding of no significant adverse impact to the transmission system due to the proposed project's interconnection. Such final determination by the Reliability Committee is pending. (QS 3, response 35)

Project Construction

128. A Construction General Permit from DEEP would be obtained before commencement of construction activities. (QS 3, response 67)

129. The proposed construction sequence would be the following:
- a) Flag the limits of the construction necessary to facilitate the pre-construction meeting;
 - b) Hold pre-construction meeting;
 - c) Install erosion and sedimentation controls;
 - d) Cut trees within clearing limits and remove cut wood. Chip brush and slash, stockpile chips for future use or remove off site;
 - e) Construct settling basins, if needed;
 - f) Strip and stockpile all topsoil that is within the footprint of the access road and concrete equipment pads and reference stockpile management for erosion and sedimentation controls. Prime farmland soils shall be excavated and stockpiled in accordance with the Soils Management Plan;
 - g) Prepare sub-base and concrete placement for equipment pads;
 - h) Install gravel access roads;
 - i) Install all subsurface utilities;
 - j) Install solar racking systems and solar panels;
 - k) Place topsoil where required;
 - l) Seed and mulch disturbed areas;
 - m) After site is stabilized, remove temporary erosion and sedimentation controls, e.g. geotextile silt fences.
- (QS 1, Tab N, p. 3-3)
130. Of the approximately 561 acres of the subject property, approximately 270 acres would be developed to construct the proposed project. (QS 1, p. 1-1)
131. Approximately 118 acres of vegetation would be cleared to allow for construction and operation of the project and to minimize shading impacts. (QS 1, p. 3-6)
132. The primary construction entrance/access for the proposed project is located in the southern portion of the project area, off of Wauregan Road in Canterbury. (QS 1, p. 3-5)
133. Cleared and grubbed areas would be stabilized, and construction period erosion controls would be installed after clearing and grubbing. QS would avoid having more than five acres of soil exposed at any given time during clearing and grubbing by installing stormwater controls and stabilization materials (mulch) during the clearing and grubbing period. (QS 3, response 61; Tr. 3, pp. 118-119, 152)
134. QS would utilize a continuous clearing, grubbing and stabilization process for five-acre areas. Specifically, as clearing and grubbing occurs, silt fence or other recommended measures would be installed around the area, and then erosion control mix and stabilization materials would be placed on the exposed soil. (Tr. 3, pp. 153-154)
135. The Petitioner contends it would take one or two days to complete the clearing to stabilization process for a five-acre area. (Tr. 3, p. 153)
136. Notwithstanding such continuous process, the construction contractor would determine whether it is more efficient to have the entire project area cleared and stabilized (in five-acre sections) before beginning to install the solar facility equipment or to install equipment within each five-acre area after it has been cleared and stabilized. (Tr. 3, p. 155)

137. The Petitioner believes that minimal site alteration is proposed, and generally materials removed would be used as fill so that no fill materials would be removed or added to the site. The Petitioner asserts that minor grading may be required along proposed access roads in select locations based on topography. (QS 1, p. 3-6; QS 3, response 62)
138. Posts would be installed using a pile driver. If post refusal occurs, further action would be evaluated at that time. (QS 3, response 64)
139. If the proposed project is approved, QS estimates that its construction schedule timeline would be approximately one year later than originally projected in the Petition. Accordingly, vegetative clearing would commence in late 2018. Site work and land preparation would be expected to be completed by the fall of 2019. Final site stabilization, testing and commissioning would be expected to be completed by the end of 2019 to meet the deadline according to PPA requirements. (QS 1, p. 3-7; Tr. 3, pp. 129-131)
140. Construction hours would be expected to be Monday through Saturday between 7:00 a.m. and 9:00 p.m. While construction hours are planned for weekdays during daylight hours, some weekend work may be necessary due to unforeseen circumstances. (QS 3, response 66)
141. To reduce impacts to neighbors during the pile driving process, QS could reduce typical construction hours to between 7:00 a.m. to 7:00 p.m., or at least not have evening hours as late as 9:00 p.m. within a certain distance of residences. (Tr. 3, p. 113-114; QS 3, response 64)
142. QS would include the proposed construction hours in the D&M Plan. (Tr. 1, p. 45; QS 3, response 66)

Traffic

143. QS anticipates that construction vehicles would utilize Interstate 395, Route 6, Route 14, and/or Route 12, depending on their point of origin. From there, vehicles would likely access the gated entry point from Wauregan Road via Route 205. (QS 3, response 77)
144. The proposed project would have a limited impact on traffic flow. Specifically, during construction, 5 to 10 delivery vehicles would be expected to visit the site daily. (QS 3, response 77)
145. After the solar plant is operational, approximately two to five operating staff would be expected to visit the site a few times per day during the week. (Tr. 1, p. 40)

Facility Operation

146. The project parameters, including the 25 degree angle of the panels above the horizontal, were selected to maximize energy production. (QS 3, response 19)
147. The estimated capacity factor of the project would be approximately 19.6 percent. (QS 3, response 20)
148. The proposed project would be expected to produce approximately 109,500,000 kilowatt-hours (kWh) or 109,500 MWh of AC electrical energy per year. (QS 3, response 50; Tr. 3, p. 26)
149. As the solar panels age, power output would decline by roughly 0.5 percent per year. (Tr. 3, p. 10)

150. The proposed solar facility would be expected to have a service life of at least 40 years. (QS 1, p. 3-7)
151. Black start capability is the capability of a power plant to start generating electricity by itself without any outside source of power, such as during a blackout. Unlike a black start facility, the proposed solar plant requires electric transmission power to operate. (Council Administrative Notice Item No. 49 – Council 2014/2015 Forecast Report, p. 53; Tr. 3, p. 178)

Project Decommissioning

152. QS provided a decommission plan including plant infrastructure removal plans and site restoration plans. (QS 1, Tab E – Decommissioning Plan)

Public Safety

153. The proposed project would meet or exceed applicable industry, national, state and local codes and standards, including but not limited to the National Fire Protection Association, National Electrical Code, and the National Electrical Safety Code. (QS 1, p. 6-3; QS 3, 37)
154. Prior to operation, the Petitioner would meet with first responders from the Towns of Brooklyn and Canterbury to provide them with information and training regarding response to emergencies at photovoltaic facilities and provide a tour of the facility. (QS 1, p. 6-3; Tr. 3, p. 27)
155. Adequate access for fire and emergency service equipment would be provided via the proposed access roads. (QS 1, p. 6-4)
156. Each inverter would have a disconnect switch. All disconnect switches would be clearly marked for use in an emergency. The system would be remotely monitored through a data acquisition system and would feature remote shutdown capabilities. (Tr. 3, p. 29; QS 1, p. 6-4)
157. The solar plant would have a protection system to shut the plant down in the event of internal or external disturbances (e.g. faults) as well as during power outage events. (QS 3, response 36)
158. The design wind speed for the solar panels with vertical post foundation is 119 miles per hour per American Society for Civil Engineers standard. (QS 3, response 27)
159. Snow would be allowed to accumulate on the panels and natural slide or melt off of the panels. The racking system that would support the solar panels would be designed to accommodate the maximum snow load expected for the location in accordance with the State Building Code. (QS 3, responses 71 and 72; Tr. 1, p. 29)

Aviation Safety - Glare

160. The Wauregan Heliport is located approximately 2 miles east of the proposed site, in the Town of Plainfield. (QS 3, response 45)
161. By letters dated March 28, 2017, the Federal Aviation Administration (FAA) issued a Determinations of No Hazard to Air Navigation (No Hazard Determinations) for the proposed project based on QS' filings for the four corners of the project. The No Hazard Determinations expire on September 28, 2018 unless construction commences or it is extended/revised by the FAA. (QS 1, Tab P)

162. While the No Hazard Determinations are based on the height and location of the proposed facility, QS has also consulted with an FAA Obstruction Evaluation Specialist to confirm that a glint/glare analysis is not required. (QS 3, responses 45 and 46)
163. No marking or lighting is required for aviation safety. However, the No Hazard Determinations require that QS provide notice to the FAA within 5 days after construction reaches its greatest height. (QS 1, Tab P)
164. A crane would be needed to set the Project Transformer in place, but because of the minimal height, notice to the FAA would not be required. (QS 3, response 47)

Environmental Effects

Air Quality

165. During operation, the proposed project would not produce air emissions of regulated air pollutants or greenhouse gases. Thus, no air permit would be required. (QS 1, p. 6-4)
166. The proposed project would meet DEEP air quality standards. (QS 1, p. 7-1)
167. Given the loss of carbon dioxide sequestration over the life of the facility due to tree clearing and the carbon dioxide emitted from the manufacture of the solar equipment versus the net carbon dioxide emissions reduction resulting from the solar facility displacing existing fossil fueled generation in the grid portfolio, the “carbon debt payback period” would be approximately seven years. (QS 3, response 50; QS 5, response 82; QS 1, p. 4-1)
168. QS is proposing the use of newer off-road and on-road construction vehicles that would meet either the latest EPA or California Air Resources Board emissions standards. (QS 1, p. 6-4)

Water Quality

Hydrology

169. The proposed project would not consume water during its operation. (QS 1, p. 6-10)
170. No work is proposed within the 100-year or 500-year flood zone. (QS 5, response 80)
171. The Quinebaug River is classified by DEEP as a Class B surface water body. Designated uses for Class B surface water bodies include habitat for fish and other aquatic life and wildlife; recreation and navigation; and industrial and agricultural water supply. (QS 1, p. 6-10)
172. The proposed project would not be located within a DEEP-designated Aquifer Protection Area. (QS 3, response 56)
173. The groundwater depth at the proposed site is not yet available. A geotechnical study is being performed but is not yet complete. (Tr. 1, p. 42)
174. Groundwater at the proposed site is classified as Class GA according to DEEP. Class GA-designated uses include existing and private and potential public or private supplies of water suitable for drinking without treatment and base flow for hydraulically-connected surface water bodies. (QS 1, p. 6-9)

- 175. According to DEEP, there are no public water supply wells proximate to the proposed site. (QS 1, p. 6-9)
- 176. Construction of the proposed project would not be expected to impact private wells. (Tr. 1, p. 20)
- 177. Any water utilized for dust suppression during construction would be minimal and would not impact the water quality in the vicinity of the proposed site. (QS 1, p. 6-10)
- 178. Regular solar panel cleanings are not anticipated due to rain/snow precipitation. If panel cleaning becomes necessary, minimal water to remove the deposits would be utilized and would not be expected to impact water quality. No cleaning chemicals would be utilized. (QS 3, response 74; Tr. 1, p. 52)

Stormwater

- 179. Stormwater would fall onto the solar panels and would flow off the edge into the vegetated surface and flow along existing flow paths as under existing conditions. The only solar panels that are considered impervious would be the most up-gradient panels in each subcatchment. (QS 1, Tab N, p. 2-5)
- 180. QS would file a final stormwater pollution control plan (including temporary stormwater management provisions) prior to construction. (QS 3, response 69; Tr. 1, p. 20-21)
- 181. QS would comply with the recommendations from DEEP outlined in “Stormwater Management at Solar Farm Construction Projects” dated September 8, 2017. (Tr. 1, p. 21; DEEP Stormwater Recommendations received September 14, 2017)
- 182. In accordance with DEEP General Permit guidelines, stormwater design components would be installed in five-acre stages to control stormwater flows onto adjacent properties during construction. (QS 3, response 68)
- 183. Existing and post-construction stormwater peak discharge rates in cubic feet per second (cfs) are listed below. Post-construction discharge rates would decrease from the existing discharge rates at the identified locations under various storm events.

| | | 2-year Storm Event (cfs) | 10-year Storm Event (cfs) | 25-year Storm Event (cfs) | 100-year Storm Event (cfs) |
|---------------------------|----------|---|--|--|---|
| Design Point 1 (West) | Existing | 26.0 | 73.1 | 98.7 | 181.5 |
| | Proposed | 12.6 | 45.2 | 65.0 | 112.0 |
| Design Point 2 (South) | Existing | 3.7 | 16.5 | 24.0 | 41.0 |
| | Proposed | 0.3 | 4.0 | 7.8 | 31.8 |
| Design Point 3 (East) | Existing | 62.7 | 140.8 | 178.1 | 255.7 |
| | Proposed | 52.9 | 131.3 | 170.0 | 251.8 |

(QS 1, Tab N – Stormwater Management Report, p. 2-9)

Wetlands and Watercourses

184. The Inland Wetlands and Watercourses Act (IWWA), CGS §22a-36, *et seq.*, contains a specific legislative finding that the inland wetlands and watercourses of the state are an indispensable and irreplaceable but fragile natural resource with which the citizens of the state have been endowed, and the preservation and protection of the wetlands and watercourses from random, unnecessary, undesirable and unregulated uses, disturbance or destruction is in the public interest and is essential to the health, welfare and safety of the citizens of the state. (CGS §22a-36, *et seq.*)
185. The IWWA grants regulatory agencies with the authority to regulate upland review areas in its discretion if it finds such regulations necessary to protect wetlands or watercourses from activity that will likely affect those areas. (CGS §22a-42a)
186. The IWWA forbids regulatory agencies from issuing a permit for a regulated activity unless it finds on the basis of the record that a feasible and prudent alternative does not exist. (CGS §22a-41)
187. There are 16 wetland areas within the properties that comprise the project. Forested wetlands are the most common on the properties, one emergent/wet meadow wetland was identified within the corn field and a small ponded area with riparian fringe is located in the southeastern portion of the project area. Three intermittent watercourses are also located within the project area. Two of the three streams were located within forested wetland boundaries. The third stream empties into a wetland. (QS 1, p. 6-10, Tab L, pp. 5, 6)
188. No wetlands or watercourses would be directly impacted by the project. No clearing would occur in wetlands or watercourses. (QS 1, pp. 3-4, 3-6)
189. Forested wetlands on the project site were typically dominated by red maple and eastern white pine with an herbaceous layer consisting of sensitive fern, cinnamon fern and skunk cabbage. The shrub layer of the forested wetlands consisted mostly of multiflora rose. (QS 1, Tab L, p. 5)
190. The project was designed to avoid wetlands, watercourses and vernal pools through a 50-foot buffer. The only areas where work would occur within the 50-foot buffer is associated with proposed improvements to existing access roads near three wetland areas (DK-WL-A, NJ-WL-G, DK-WL-F). (QS 1, pp. 6-10, 6-11)
191. There are two locations of the project, both within the Town of Canterbury, where the proposed fence would be approximately 12 feet from a wetland boundary. At these two locations, the existing road is approximately 15 feet from the same wetlands. (QS 3, response 55)
192. A complex of interconnected wetlands, streams and vernal pools was identified along and outside of the western boundary of the project area associated with Blackwells Brook. The project was designed to maintain a minimum 75-foot buffer from Blackwells Brook and a 100-foot buffer from the vernal pool in this area (VP-03-01). (QS 1, p. 6-10)
193. Erosion and sedimentation controls would be installed and maintained in accordance with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control* to minimize temporary effects to wetland areas during construction. Additionally, a Wetland Protection Plan would be implemented during construction for the protection of wetland resources. Disturbed soils would be revegetated to minimize soil movement post-construction. (QS 1, p. 6-11)

194. The wetland protection plan consists of: erosion control measures that would control erosion and minimize wildlife entanglement; periodic inspection and maintenance of isolation structures and erosion controls; education of contractors and sub-contractors prior to initiation of work on site; protective measures; and reporting. (QS 1, Tab L, Wetland Protection Program)
195. Wetland and waterbody delineation was completed during July and August of 2016. 16 wetland resources regulated by the United States Army Corps of Engineers or Connecticut Department of Energy and Environmental Protection were identified within the project area. (QS 1, Tab L, p. 5)
196. The entire project site was surveyed in a meandering grid pattern to search for potential amphibian species in all wetland areas. (QS 5, response 105; Tr. 3, pp. 81, 82)

Vernal Pools

197. Vernal pool surveys were completed in April 2016 for the project area. The surveys were performed following the Connecticut Association of Wetland Scientists (CAWS) Vernal Pool Monitoring Program Protocol, with additional guidance from the Maine Association of Wetland Scientists Vernal Pool Technical Committee Vernal Pool Survey Protocol. Eight vernal pools were identified within the project area. Of these, six are naturally-occurring, one is natural-modified and one is unnatural. (QS 1, Tab L, p. 6, Vernal Pool Survey Report, attachment A; QS 5, response 92; Tr. 3, p. 107)
198. During vernal pool surveys, the Petitioner's consultant spent between 19 and 40 minutes in each of five vernal pools depending on vernal pool size, and abundance and diversity of fauna observed. The average time in each pool was 27 minutes. Survey techniques included wading through the pools, visual observation and dipnetting in the vernal pools. (QS 5, responses 91 and 94)
199. Potential vernal pools were identified through meandering surveys in a rough grid pattern using a global positioning system device throughout the project site. (QS 5, response 94; Tr. 3, p. 50)
200. Wood frog egg masses were observed in one vernal pool (VP06_2) during the surveys. Additionally, wood frog tadpoles were observed in one vernal pool (VP04_2). Additional areas of ponded water were observed during surveys but these areas did not contain signs of primary or secondary vernal pool indicator species. (QS 1, Tab L, pp. 6, 7)
201. Two vernal pools on site (VP04_2 and VP06_2) are Tier I pools, which has the highest ecological value. The other three vernal pools (VP05_1, VP03_2, VP04_1) are rated as Tier III. (QS 1, Tab L, pp. 7, 8; QS 5, response 103)
202. The petitioner did not employ pit fall traps or nighttime surveys on the site to determine the presence of eastern spadefoot toads. (QS 5, response 112; Tr. 3, p. 94)
203. Exclusion fencing may be used during construction to exclude small vertebrate species from entering the project site. Avoidance methods would include stopping construction activities if snakes or other wildlife are observed in areas of active construction where they could be harmed. Environmental monitors and monitoring programs would be used to identify species of concern within and around construction activities. (QS 5, response 119)
204. Dip nets were used to assess the vernal pools on the properties rather than minnow traps. (Tr. 3, pp. 51-52)

205. Field biologists took a random approach when turning over cover objects around vernal pools during the surveys. Not all of the cover objects were turned around. Approximately 25 percent of cover items were turned over. (Tr. 3, pp. 53, 54, 78-79)
206. Vernal pool surveys that were conducted in 2016 focused on identifying the locations of vernal pools on the properties and conducting limited biological sampling. (Tr. 3, p. 56-58)
207. According to Calhoun and Klemens Best Development Practices (BDP) for Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States, standards are that no development may occur within the vernal pool envelope and 25 percent development may occur on the critical upland habitat zone around the pool. The Vernal Pool Envelope (VPE) is the area from 0 to 100 feet from the vernal pool itself. The Critical Terrestrial Habitat (CTH) of a vernal pool is the area between 100 feet and 750 feet from the vernal pool itself. (QS 5, response 103; Tr. 3, p. 67)
208. Three vernal pools including, VP04_1; VP05_1; and VP03_2, have project development proposed within the Vernal Pool Envelope. Additionally, the proposed project would develop areas within the CTH of the vernal pools as follows.

| Vernal Pool Designation | Pre-construction % CTH developed | Post-construction % CTH developed |
|--------------------------------|---|--|
| VP01_1 | 4.24 | 25.72 |
| VP02_1 | 3.29 | 29.33 |
| VP03_1 | 5.08 | 35.7 |
| VP03_2 | 1.54 | 30.04 |
| VP04_1 | 15.35 | 78.36 |
| VP04_2 | 4.29 | 41.58 |
| VP05_1 | 32.54 | 80.26 |
| VP06_2 | 0.2 | 77.71 |

(QS 5, response 103)

209. The Petitioner concedes that the proposed project would impact the CTH around the vernal pools on the properties and would comply with required mitigation measures. (Tr. 3, pp. 68, 69)
210. The Petitioner has considered compensatory mitigation of project impacts to a Connecticut vernal pool conservation fund because the project would reduce the amount of CTH around the vernal pools. (Tr. 3, p. 69)
211. Following construction, the solar field would function from a hydrological perspective mostly as a meadow that would be mowed approximately twice per year. (Tr. 3, pp. 73, 74)
212. During vernal pool surveys, cover searching was performed in the pools. Approximately 25 percent of the items found in and around the vernal pools were turned over during cover searching. (Tr. 3, pp. 78, 79)

Visibility

213. The solar panels would be black with an anti-reflection coating on the glass. No direct or sky-reflected glare is anticipated as part of this project. (QS 3, responses 29 and 42)

214. QS proposes to plant vegetative screening to mitigate potential visual impacts in the following locations: along Wauregan Road (in the vicinity of Liepis Road) and along Liepis Road in the southeastern portion of the site (in Canterbury), and along portions of Allen Hill Road and Rukstella Road in the northern portion of the proposed site (in Brooklyn). (QS 3, response 42; Tr. 1, p. 36)
215. The Last Green Valley National Heritage Area (LGVNHA) extends over an area of approximately 1,085 square miles around the Quinebaug and Shetucket Rivers systems in northeastern Connecticut and south-central Massachusetts. The LGVNHA encompasses architecturally and culturally significant structures, attractions, villages and open spaces. The proposed project is not expected to impact the LGVNHA. (QS 3, response 59)
216. Route 169 is a State-designated scenic road. Given the distance from Route 169 to the proposed facility, the visual impact is not expected to be significant. (Tr. 3, pp. 170-171)
217. The nearest public recreation area is Quinebaug State Park Scenic Reserve, located approximately 2.5 miles to the northeast of the project area. (QS 1, Tab L, p. 3)
218. The J. Arthur Atwood Memorial Field is located approximately 0.75 miles to the east of the proposed site. The proposed project is not expected to be visible from this recreational area. (QS 3, response 12)
219. The use of lighting for the proposed project would be limited to the Project Transformer on occasions when a worker is present to perform work. (QS 1, p. 6-7)

Noise

220. QS performed a noise assessment study for the proposed project to take into account the inverters and the substation power transformer, which would be the sources of the noise for the proposed project. (QS 1, Tab O – Acoustic Analysis, p. 1)
221. The sources of noise for the proposed project would only operate in the daytime when electricity would be produced by the solar panels. (QS 1, Tab O – Acoustic Analysis, p. 1)
222. The proposed project would be considered a residential Class A noise emitter, and its surrounding areas are treated as Class A residential receptors. The DEEP Noise Limit for a Class A source emitting to a Class A receiver is 55 dBA during the daytime. (QS 1, Tab O – Acoustic Analysis, p. 2; QS 3, response 40)
223. The proposed facility would be in compliance with DEEP Noise Standards because the maximum worst-case noise level at any nearby residences would be 36.8 dB, which is below the DEEP Noise Limit of 55 dBA. (QS 1, Tab O – Acoustic Analysis, pp. 2-3)
224. Construction noise is exempt from DEEP Noise Standards. (R.C.S.A. §22a-69-108(g))

Historic and Archaeological Resources

225. The nearest historic resource listed on the National Register of Historic Places is the Wauregan Historic District (WHD). The WHD consists of a mill village established around a cotton mill that was powered by the Quinebaug River. The WHD is located approximately 0.5 miles from the eastern limits of construction for the proposed project. Due to the distance, the proposed project would not directly impact the WHD. The viewshed from the WHD would not be impacted by the proposed project because of the hilly and forested nature or terrain between the proposed solar facility and the WHD. (QS 3, response 13)
226. A Phase 1A Cultural Resources Assessment Survey Report (Phase 1A Report) dated January 2017 was prepared by Heritage Consultants, LLC (Heritage) for the proposed project. The assessment concluded that, of the approximately 544 acres under consideration for the proposed project, 244 acres retain no to low archaeological potential, and approximately 300 acres possess a moderate to high sensitivity for producing archaeological resources. (QS 1, Tab K, Phase 1A Report, p. 46)
227. Heritage further notes that, since the no to low archaeological potential areas consist of previous disturbed, paved, mucky, and/or wet conditions, no additional archaeological investigation of these areas is recommended. The portions of the acreage that have been assessed as possessing moderate to high archaeological sensitivity and would be impacted by the proposed project should be examined using subsurface testing techniques as part of a comprehensive Phase 1B cultural resources reconnaissance survey (Phase 1B Survey). The field methods for the Phase 1B Survey should be developed in consultation with SHPO. (QS 1, Tab K, Phase 1A Report, p. 46)
228. The Phase 1A Report was reviewed by the SHPO. By letter dated May 17, 2017, SHPO notes that no properties listed on the NRHP have been documented within or immediately adjacent to the project. However, several archeological sites have been recorded along the edges of the project area such as a historic cemetery, agricultural complex (e.g. Mowrey House) and residential building (i.e. Butts/Cady/Harris House). SHPO finds the submitted map to avoid impacts to these resources acceptable. Lastly, SHPO would review a Scope of Work for archaeological testing of remaining areas identified as having a moderate to high sensitivity that would be impacted by the project. (QS 1, Tab K, SHPO Letter dated May 17, 2017)
229. Field work for the proposed Phase 1B Survey is pending. QS, through its archaeological consultant, Heritage has prepared and submitted a Scope of Work for the Phase 1B Survey to SHPO. The Scope of Work is currently under review by SHPO. QS would not commence the Phase 1B Survey until it receives feedback from SHPO. As of October 17, 2017, a response from SHPO has not yet been received. (QS 3, response 14; Tr. 1, p. 17; Tr. 3, p. 10)

Geology

230. Bedrock within an approximately 451-acre study area (Study Area) based on the project footprint is primarily granite, schist and gneiss. Surface material is mostly glacial till, with some stratified deposits in valleys. (QS 1, Tab L, p. 20)
231. Surficial geology within the study area primarily includes sand overlying fines (in the western-most third of the site), thick till (in the middle third of the site), and sand and gravel overlaying sand (gravel extraction areas in the middle and eastern third of the site). (QS 1, Tab L, p. 20)
232. A Phase I Environmental Site Assessment was conducted at the proposed solar project site. No Recognized Environmental Conditions, Historical Recognized Environmental Conditions or Control Recognized Environmental Conditions were identified on the site. (QS 3, response 9)

Wildlife

233. The Quinebaug River Wildlife Management Area (QRWMA) and the Quinebaug Fish Hatchery are southeast of Wauregan Road in the vicinity of the main entrance to the project site. (DEEP letter received September 14, 2017)
234. The QRWMA contains two agricultural fields cultivated by a local farmer and also supports turkey, small game, waterfowl and deer hunting, trapping, fishing, wildlife observation, hiking and horseback riding. (DEEP letter received September 14, 2017)
235. Portions of DEEP's Natural Diversity Database (NDDB) polygons overlap the project area. However, the habitat existing on the project area is dissimilar to the habitat types comprising the rest of the NDDB polygon. (QS 1, p. 6-9)
236. As of October of 2016, 2 state-listed endangered species and 10 special concern species were identified as potentially occurring within the study area. Two additional state-listed endangered bat species were identified during bat surveys as occurring on the project site. (QS 1, Tab L, p. 15)
237. To avoid impacts to state-listed species, DEEP recommends a qualified biologist perform field surveys of the project area to identify the presence or absence of state listed species, and provide the survey report to DEEP for further review by its staff. If the Petitioner does not undertake these site surveys, it may assume that all state-listed species are present on the site and develop plans to protect each species and provide those plans to DEEP. (QS 1, Tab M; DEEP comments, p. 1)
238. The Petitioner notes that there is no substitution for site-specific surveys. (Tr. 1, p. 78)
239. State-listed endangered, threatened and special concern species include four mammal species, two bird species, two reptile species, two amphibian species, one fish species, one invertebrate species and two plant species. The fish and invertebrate species are unlikely to occur on the project area due to lack of suitable habitat. Additionally, one of the plant species listed is typically found at elevations from 1,200 feet to 2,000 feet above mean sea level (amsl). Since the project area elevations do not rise above 1,200 feet amsl, the species is unlikely to occur at the site. (QS 1, Tab L, p. 19)
240. The Petitioner contends that, the agricultural and open fields in the project area are of limited habitat value due to ongoing vegetation management and low vegetative diversity. (QS 1, p. 6-9)
241. Federally-listed species that may occur in the area of the proposed project include one mammal species, the northern long-eared bat and 18 bird species. (QS 1, Tab L, p. 10)
242. Project personnel and contractors would be provided environmental training. Environmental audits would occur to ensure compliance with permit conditions that are intended to conserve wildlife and their natural habitats. (QS 1, p. 6-13)

Birds

243. Installation of the proposed project has the potential to impact breeding birds. QS proposes impact avoidance and mitigation strategies such as restricting vegetation removal to between August 15 and May 1 to minimize impacts to nesting birds and avoid potential disturbance during periods of high bird activity. (QS 1, Tab L, p. 9)

Mammals

Bats

244. The project area includes forested habitat interspersed with clearings and edge habitats, which could be used by foraging bats. (QS 1, p. 6-9)
245. The project site could support northern long-eared bat (NLEB), a federally listed threatened species. The petitioner conducted a bat acoustic survey in 2016 to determine the presence or absence of the bat species. NLEB were not found on the site but the little brown bat and the tri-colored bat, state-listed endangered species, were identified during the survey. No other rare threatened or endangered species were identified on the site. (QS 1, Tab L, pp. 9, 17)
246. Due to the presence of bats on the properties, tree clearing would be limited to the period between October 1 and March 31 to avoid potential impacts to bat roosting. (QS 1, p. 6-12)

Amphibians

Vernal Pool Species

247. Vernal pools were investigated for marbled salamander larvae during the surveys. At the second site visit, each pool (with the exception of VP04_1) was assessed visually and with 16 sweeps of a dipnet. (QS 5, response 98; Tr. 3, p. 62)
248. During terrestrial activity, amphibians look for woody debris areas rather than cleared or developed areas. (Tr. 3, pp. 63-65)
249. Egg mass detection for the blue spotted salamander is difficult because the species lays single eggs that are hard to find. (Tr. 3, p. 77)
250. The Petitioner is unsure whether the blue-spotted salamander is present or absent from wetland areas on the site. (Tr. 3, p. 80)
251. Many productive eastern spadefoot toad locations are on agricultural lands in eastern Connecticut or in active gravel extraction areas. (Tr. 3, p. 83)
252. Eastern spadefoot toads require fairly regular land use disturbance to keep the habitats they use primarily unforested. (Tr. 3, p. 83)
253. DEEP has a predictive model for the occurrence of eastern spadefoot toads and their relationship to Hinckley soils in this section of the Quinebaug Valley. (Tr. 1, p. 54)
254. The site has a large Hinckley sand and gravel deposit in the center with smaller amounts of Hinckley soils scattered throughout the site but primarily in the western portion of the site. Therefore, any spadefoot toads present in the gravel areas of the site could move into the surrounding fields. The Petitioner is considering potential methods to avoid impacts to this species during project construction. (Tr. 3, pp. 84, 85)
255. Approximately 18 percent of the proposed work area is underlain by mapped Hinckley soils. See Figure 6. (QS 5, response 108)

256. The Petitioner would consult with a biologist to provide methods of protection for the eastern spadefoot toad during construction activities. Methods of protection would include creating an exclusionary zone through the use of silt fence to keep the species out of the proposed construction area. (Tr. 3, p. 86)
257. The CAWS protocols which were used to assess the vernal pools on-site are not designed to monitor and detect spadefoot toads. (Tr. 3, p. 93)

Reptiles

258. The eastern hognose snake is a special concern species in Connecticut. (QS 1, Tab M, October 7, 2016 DEEP NDDDB Letter)
259. The eastern ribbon snake, a special concern species in Connecticut, uses aquatic habitats and surrounding upland shrub areas for the completion of its life cycle. (Tr. 1, p. 64; QS 1, Tab L, pp. 18-19; QS 1, Tab M, October 7, 2016 DEEP NDDDB Letter)

Agriculture

260. The statutory mission of the Governor's Council for Agricultural Development (GCAD) is to develop a statewide plan for Connecticut agriculture. In 2012, GCAD recommended DOAg create an agriculture-friendly energy policy that includes, but is not limited to, on-farm energy production to reduce costs and supplement farm income, agricultural net metering for power production and transmission, and qualification of agricultural anaerobic digestion projects for zero-emissions renewable energy credits (ZRECs). (Council Administrative Notice 93 – Grow CT Farms)
261. Agriculture in Connecticut is likely to be adversely impacted by climate change. It is most affected by changes in temperature and both the abundance and lack of precipitation. The top five most imperiled agricultural products are maple syrup, dairy, warm weather produce, shellfish and apple and pear production, but there are opportunities for production expansion with the future climate, including, but not limited to, biofuel crops, witch hazel and grapes. (Council Administrative Notice 86)
262. Adaptation strategies for climate change impacts to agriculture include promotion of policies to reduce energy use, conserve water and encourage sustainability. (Council Administrative Notice 86)
263. Pursuant to C.G.S. §22-26aa, *et seq.*, DOAg administers the Statewide Program for the Preservation of Agricultural Land (SPPAL) The main objective of the voluntary program is to establish a land resource base consisting mainly of prime and important farmland soils. A permanent restriction on non-agricultural uses is placed on the deed of participating properties, but the farms remain in private ownership and continue to pay local property taxes. (C.G.S. §22-26aa, *et seq.*)
264. Connecticut preserved 1,289 acres of agricultural land in 2015, the most since 2009. Connecticut preserved 1,563 acres of agricultural land in 2016, the most since 2011. (Council Administrative Notice 90 - CEQ 2016 Report; Council Administrative Notice 91 - CEQ 2017 Report)

265. DOAg has not purchased any development rights for the proposed site as part of the SPPAL. Although an application for consideration in the SPPAL was filed in November 1993, the Brooklyn and Canterbury land records do not contain a notice from DOAg pursuant to C.G.S. §22-26cc(b) that DOAg acquired any rights to the property. The property was subsequently sold in 2005 and immediately after the transfer, a notice to revoke any prior application for consideration in the SPPAL was recorded on the Brooklyn and Canterbury land records pursuant to C.G.S. §22-26cc(a). (Petitioner 3, Response 6)
266. Public Act 490 is Connecticut's Land Use Value Assessment Law for Farm Land, Forest Land and Open Space Land that allows land to be assessed at its use value rather than its fair market or highest and best use value for purposes of local property taxation. The site parcel is not part of the Public Act 490 Program. (Petitioner 3, Response 10)
267. The proposed project would not qualify under Connecticut's Agricultural Virtual Net Metering Program because an agricultural virtual net metering facility is defined under C.G.S. §16-244u(a)(7)(B) as having a nameplate capacity rating of 3 MW or less. (Petitioner 3, Response 7)
268. Approximately 80 acres of the proposed site property are currently used for agricultural purposes by third parties. (Petitioner 3, Response 7)
269. Prime Farmland Soils are defined by the United States Department of Agriculture (USDA) National Resources Conservation Service (NRCS) as having the ideal combination of chemical and physical characteristics to support crop production, such as for food, feed, forage, fiber and oil and seed crops. These soils are also considered important for pasture land, range land and forest land. (QS 1, Tab R – Soil Mitigation Plan, p. 1)
270. Farmland of Statewide Importance are soils which do not meet all of the requirements to be considered Prime Farmland Soils, but they are equally as important in the production of food, feed, forage or fiber crops. (QS 1, Tab R – Soil Mitigation Plan, p. 1)
271. Locally important Farmland Soils do not meet the physical or chemical requirements of either Prime Farmland or Farmland of Statewide Importance soils, but they are still used for the production of food or fiber crops and support the local economy due to their productivity. (QS 1, Tab R – Soil Mitigation Plan, p. 1)
272. The Petitioner contends that the area of estimated disturbance to mapped prime farmland soils is approximately 1.6 acres*. The Petitioner also contends that area of estimated disturbance to mapped statewide important farmland soils is approximately 3.1 acres. The Petitioner further contends that the area of estimated disturbance to locally important farmland soils is approximately 1.5 acres.
- *The 1.6-acre figure is conservative as estimated disturbances are likely to be greater than the actual impacts.
(QS 1, Tab R – Soil Impacts Map; QS 3, response 8; Tr. 1, pp. 16-17)
273. To reduce the potential impacts to agricultural soils and assure that their value is preserved during the construction, operation and decommissioning of the proposed solar project, QS has included a Soil Mitigation Plan (SMP). (QS 1, Tab R – SMP, p. 1)

274. Removal of topsoil would be required in portions of the Development Area where excavation or cutting would occur within the footprint of proposed access roads, concrete equipment pads and utility trench construction. Removal of topsoil within the mapped NRCS-mapped boundaries of all farmland soils, to a depth greater than eight-inches, would be evaluated by the contractor based on the following criteria to be observed in the field:
- a) Availability of 12-inches of mineral material soils; and
 - b) Absence of stones, cobble and boulders.
- (QS 1, Tab R – SMP, p. 2)
275. If the above criteria are met, including that the proposed disturbance would be in excess of eight inches of depth, and the area is mapped as Prime Farmland Soil or Farmland of Statewide Importance, excavated topsoil would be stockpiled. (QS 1, Tab R – SMP, p. 2)
276. Prior to construction, suitable areas for stockpiling would be staked on-site. Stockpiles would be surrounded by silt fence during construction. Temporary stabilization of stockpiles throughout construction would be achieved through the use of jute matting to limit erosion of the stockpile. (QS 1, Tab R – SMP, pp. 2-3)
277. Once earth-disturbing activities are complete, stockpiles would be permanently stabilized through the use of seed mix. Soils would be potentially available for local beneficial re-use, for agricultural practices, if there is an identified opportunity. Otherwise, such soils would be stored on-site and re-graded following decommissioning of the project. (QS 1, Tab R – SMP, p. 3)
278. Compaction of soils within designated areas of important soils would be limited during construction. Compaction of subbase materials would be required in areas of access roads, equipment pads and utility trenches to ensure proper construction. However, compaction outside of those identified areas would not be expected. (QS 1, Tab R – SMP, p. 3)
279. To further minimize compaction of important soils, deliveries of project components and infrastructure would be located outside of the limits of important soils to the maximum extent practicable. (QS 1, Tab R – SMP, p. 3)
280. Restoration of disturbed Prime Farmland Soils and Soils of Statewide Importance would be determined at the time of decommissioning. These farmland soils would be restored back to pre-existing conditions to the greatest extent practicable. (QS 1, Tab R – SMP, p. 3)

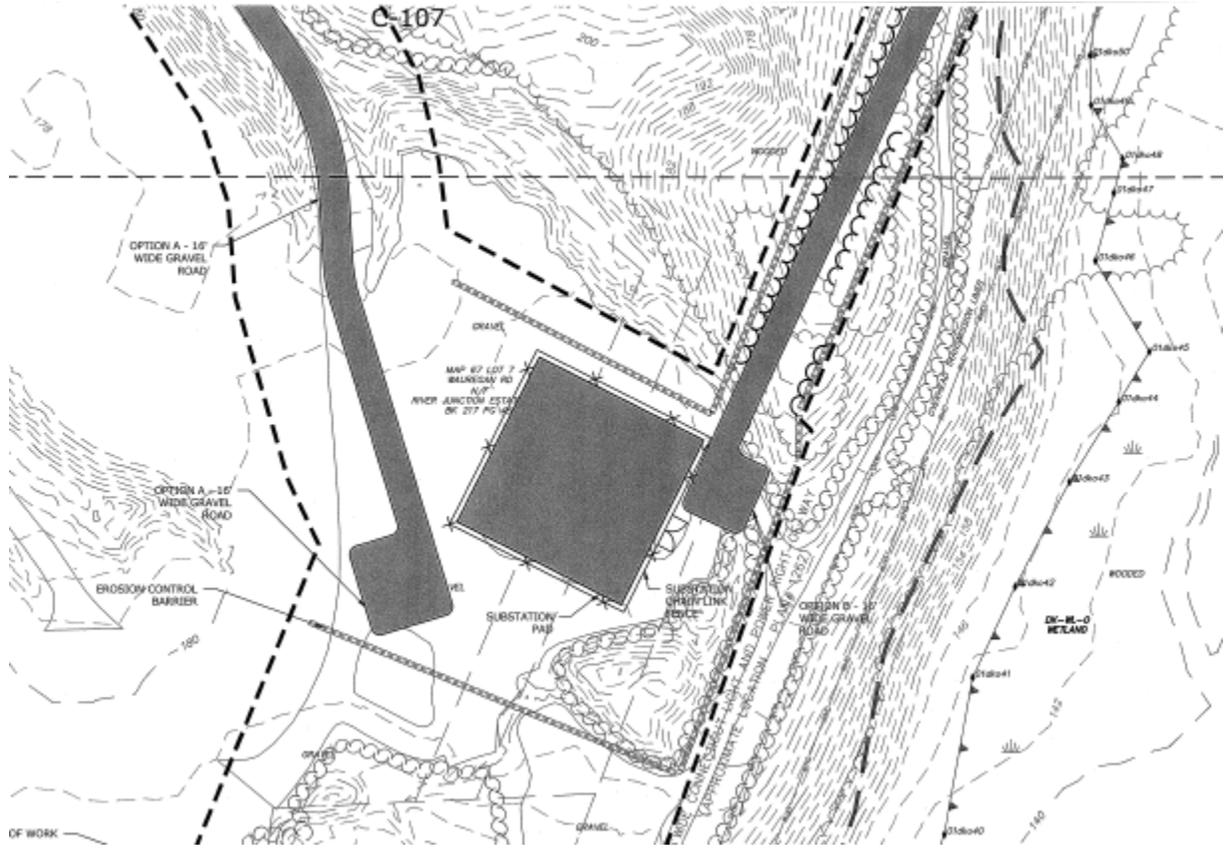
Pollinator Habitat

281. Although applicable only to electric transmission line right-of-ways, CGS §16-50hh permits the Council to consider post-construction site restoration or revegetation that includes the establishment of model pollinator habitat. (CGS §16-50hh)
282. QS is committed to identifying conservation seed mixes for the restoration of disturbed areas, including establishment of vegetative cover maintained underneath the solar panels. This would include a pollinator plan for implementation prior to construction. (QS 1, response 76)

Neighborhood Concerns

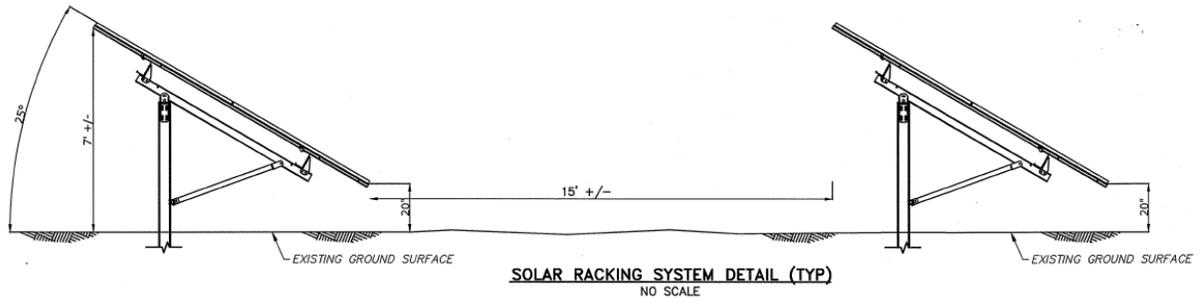
283. Pursuant to C.G.S. § 16-50m, the Council, after giving due notice thereof, held a public comment session on Tuesday, September 19, 2017 at 6:30 p.m. at the Brooklyn Community Center, Main Road, 31 Tiffany Street, Brooklyn, Connecticut. (Council's Hearing Notice dated July 24, 2017; Tr. 2)
284. Two interested persons (in addition to the First Selectman of Brooklyn) provided both oral statements during the public comment session and written limited appearance statements, and also while the record was open, 3 additional interested persons provided written limited appearance statements. (Tr. 2; Public Comment Record)
285. Of the two written limited appearance statements in favor of the proposed facility, concerns include, but are not limited to, the following:
- cleaner source of energy;
 - reducing GHG emissions; and
 - tax revenue.
- (Tr. 2; Public Comment Record)
286. Of the approximately five oral and written limited appearance statements in opposition to the proposed facility, concerns include, but are not limited to, the following:
- visual impacts to Route 169;
 - required access;
 - site clearing;
 - electricity costs;
 - decommissioning issues;
 - noise;
 - well or other groundwater impacts;
 - stormwater impacts;
 - agricultural land impacts;
 - impacts to wildlife; and
 - property values.
- (Tr. 2; Public Comment Record)
287. QS has considered alternative construction access to mitigate potential impacts to neighbors such as the Sposatos. While it is QS' preference to utilize the existing southern access for construction as much as possible, QS could potentially utilize a northern access partially as well. This would reduce the amount of construction traffic along the main access road to the south near the Sposatos' residence. (Tr. 1, pp. 46-47; Tr. 3, pp. 14-15; QS 1, Tab C, Sheet C-051)
288. QS responded to a public comment concern regarding use of the proposed access for the solar facility only versus for existing gravel operations. QS responded that any new access for the proposed solar project would not be accessible for any other purposes. (Tr. 1, p. 48)
289. QS responded to a public comment concern regarding a construction entrance and access adjacent to 265 Wauregan Road. QS notes that such access would be strictly for the installation of the gen-tie line and would not be a regularly used access road. (Tr. 1, pp. 48-49)
290. In response to public outreach to abutters, QS increased the proposed vegetative screening to the west of Liepis Road. (QS 3, response 42; Tr. 1, p. 36)

Figure 2 – Proposed Site Plan for Utility Substation



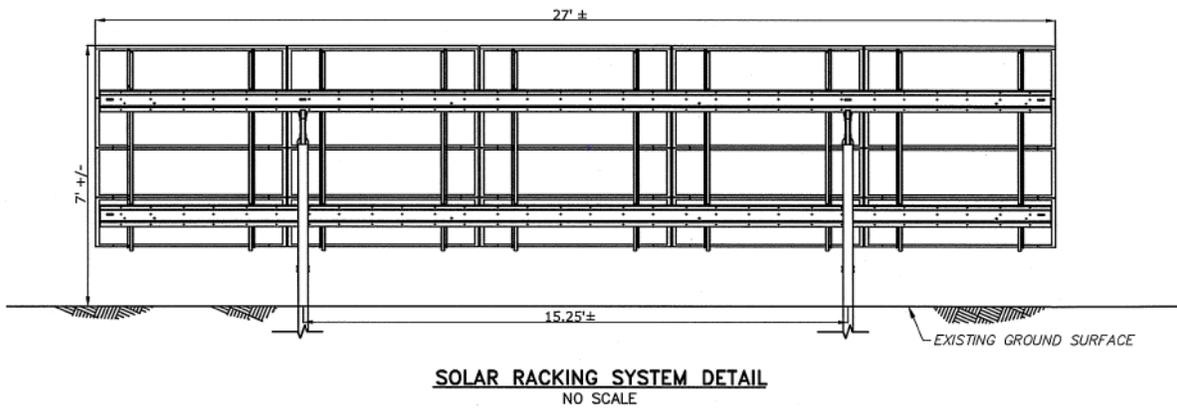
(QS 1, Tab C, Sheet C-108l)

Figure 3 – Proposed Solar Rack Side Elevation View



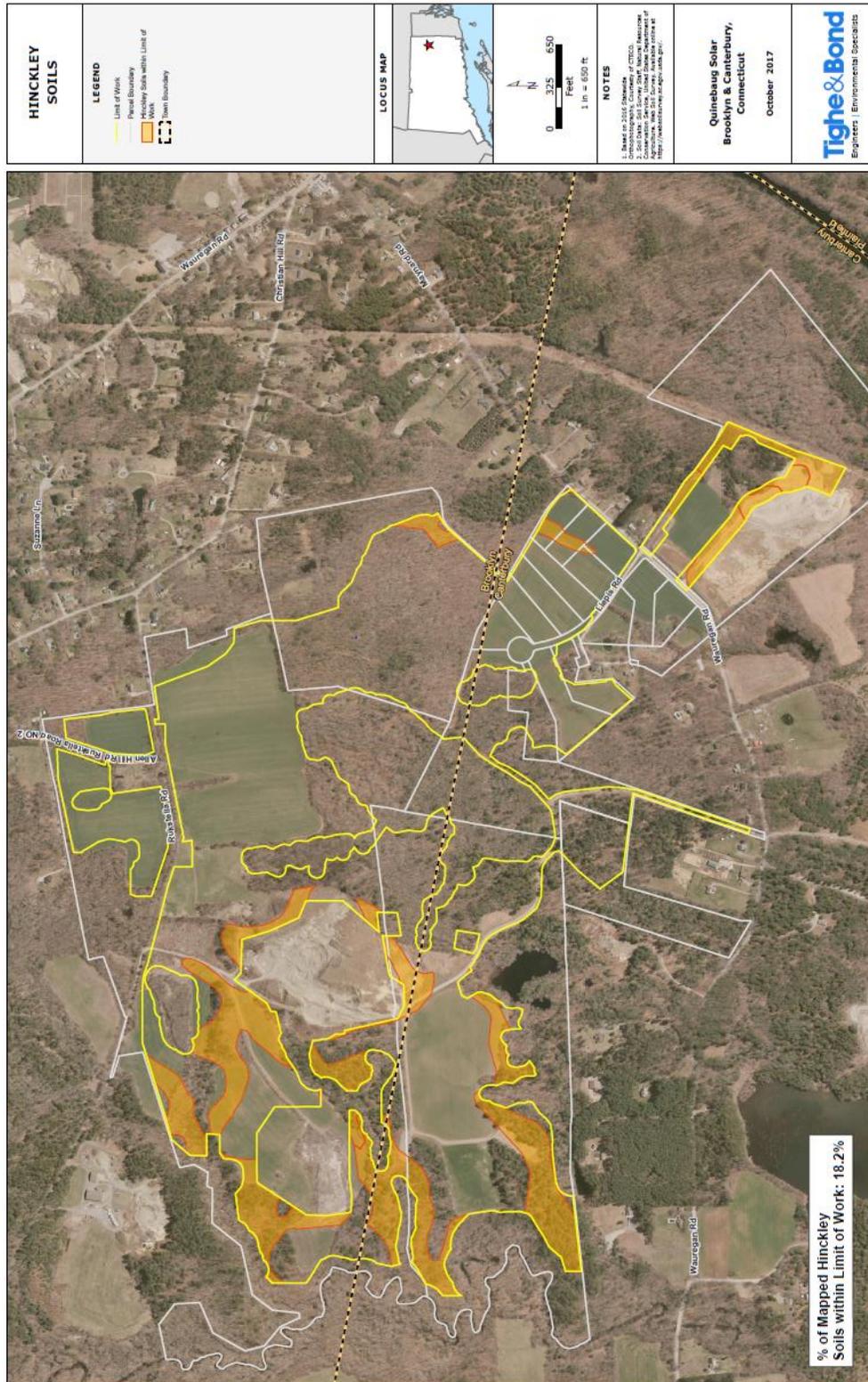
(QS 1, Tab C, Sheet G-001, Solar Racking System Detail)

Figure 4 – Proposed Solar Rack Rear Elevation View



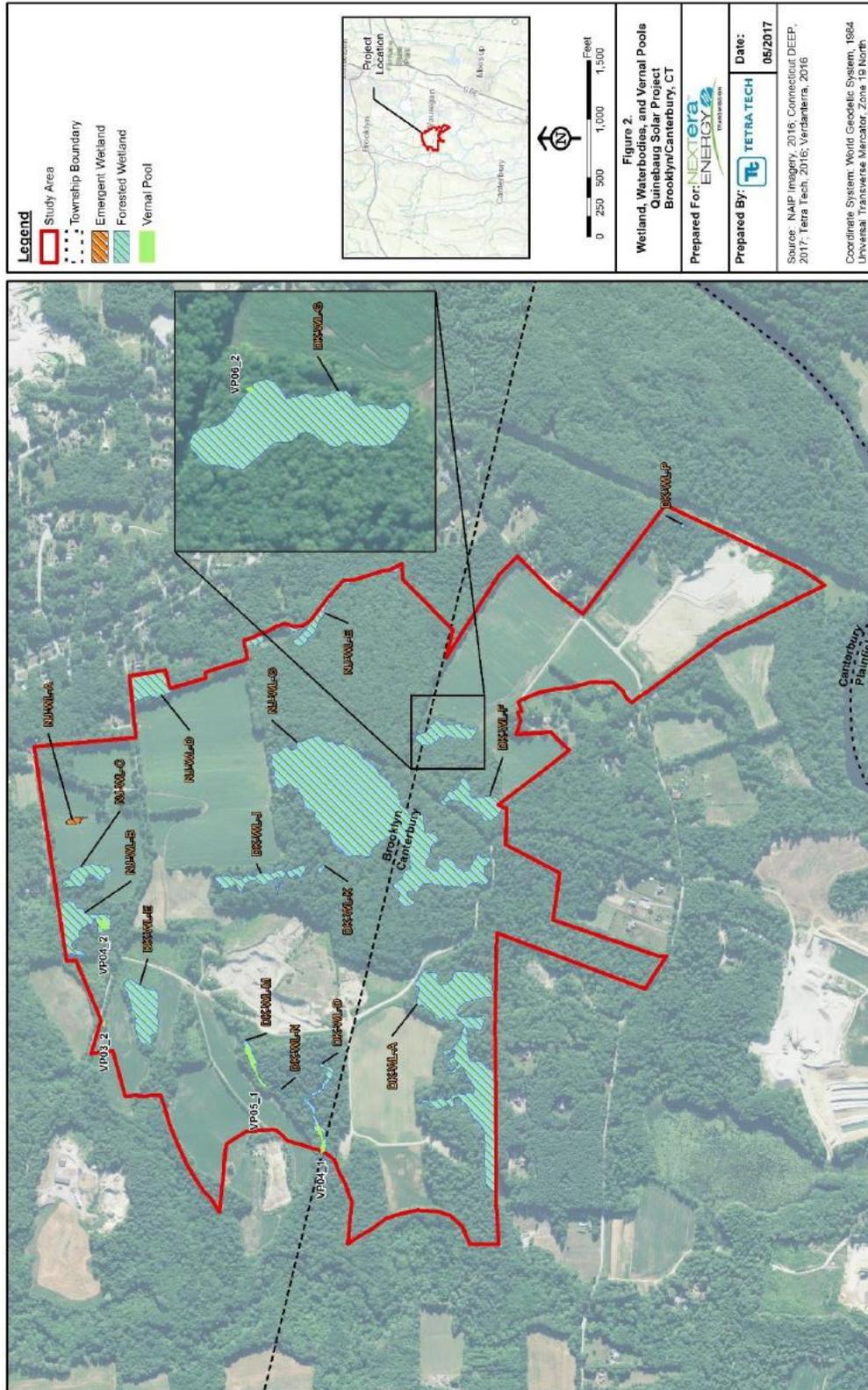
(QS 1, Tab C, Sheet G-001, Solar Racking System Detail)

Figure 6 – Hinckley Soils Map



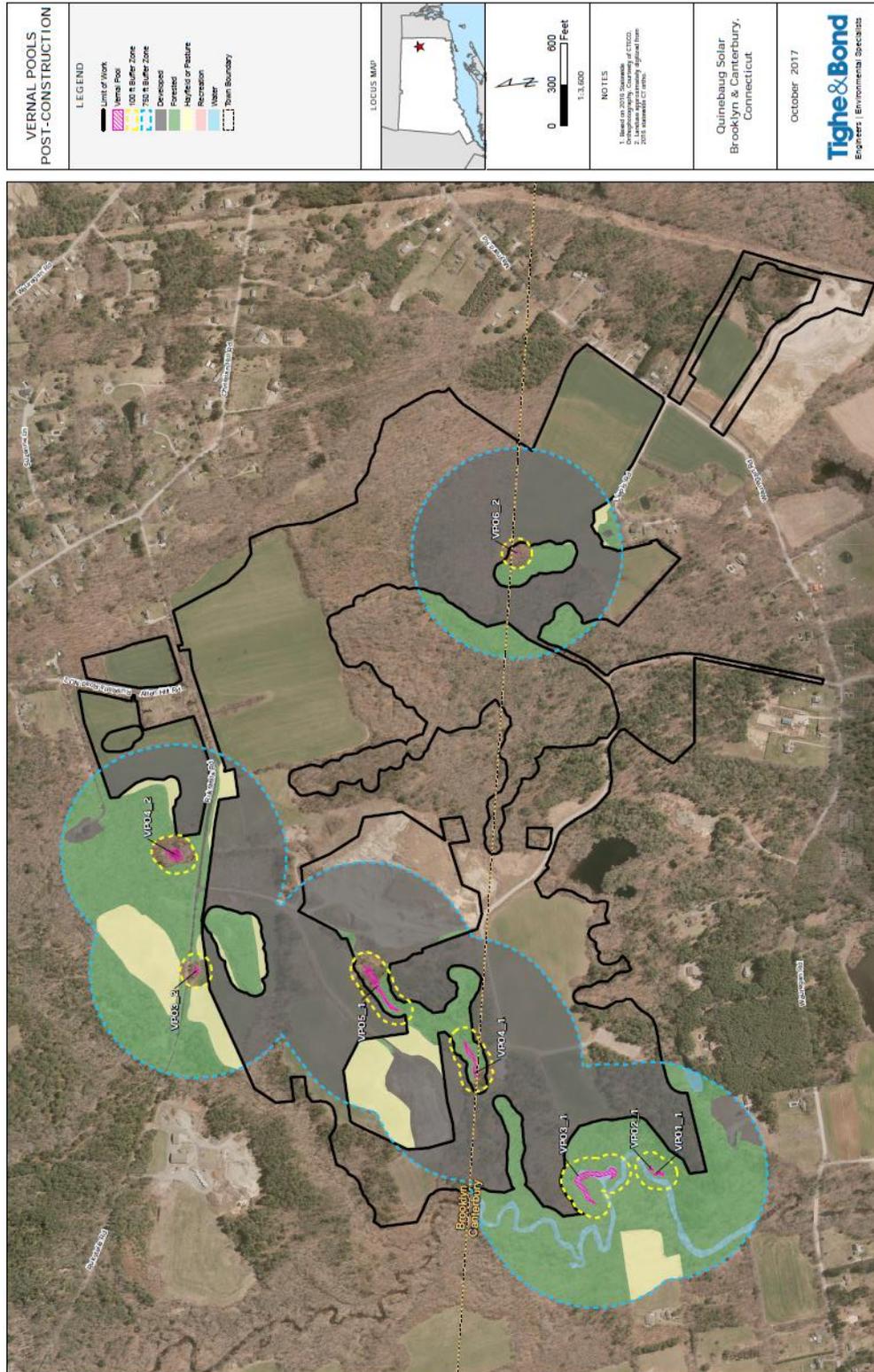
(QS 5, response 108)

Figure 7 – Wetland Map



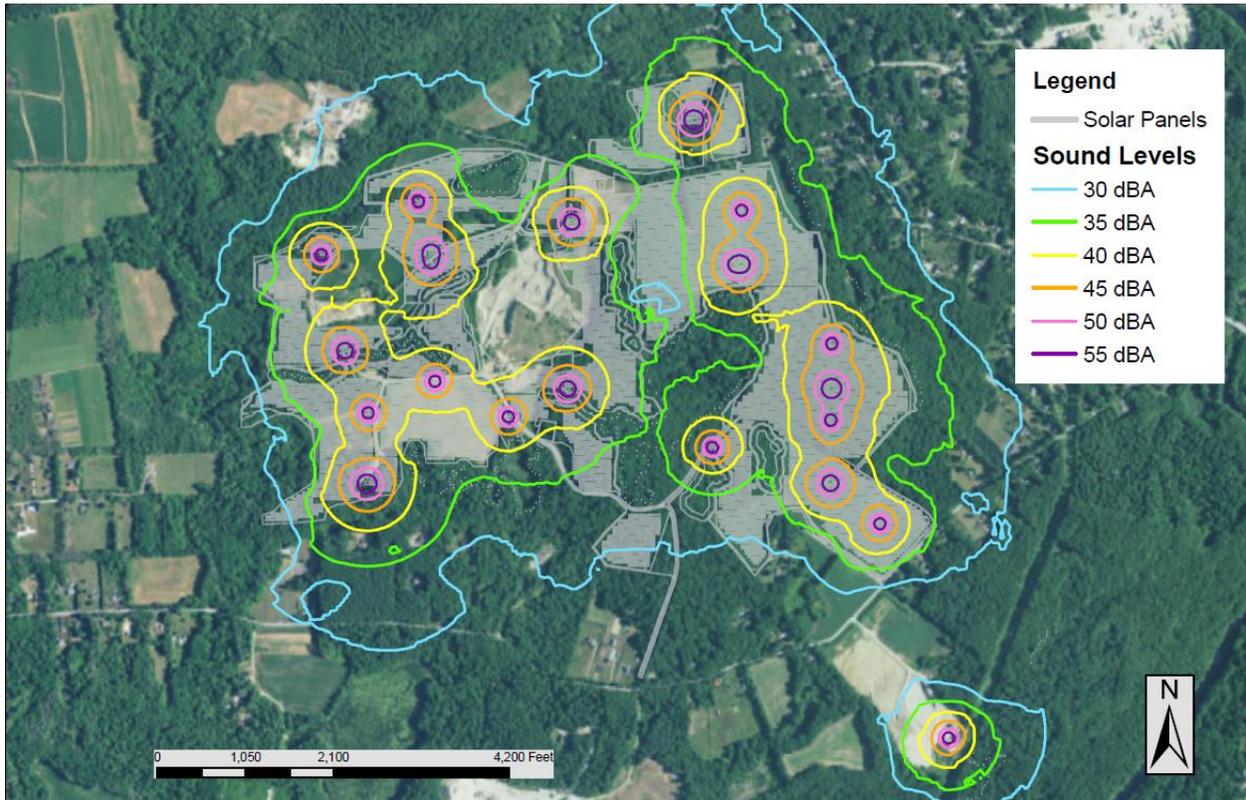
(QS 1, Tab L, Environmental Site Conditions Report, Wetlands, Waterbodies and Vernal Pools Map)

Figure 8 – Vernal Pool Analysis



(QS 5, response 103 – Vernal Pool BDP Analysis)

Figure 9 – Projected Sound Levels Map



(QS 1, Tab O, Figure 3)