DOCKET NO. 505 - Haddam Quarter Solar, LLC application for a Certificate of Environmental Compatibility and Public Need for the construction, maintenance, and operation of a 2.8-megawatt-AC solar photovoltaic electric generating facility located south of Haddam Quarter Road and north of Johnson Lane, Durham, Connecticut and associated electrical interconnection.	}	Connecticut
	}	Siting
	}	Council

December 2, 2021

Introduction

1. On July 9, 2021, Haddam Quarter Solar, LLC (Applicant), in accordance with the provisions of Connecticut General Statutes (C.G.S.) §16-50g et seq., applied to the Council for a Certificate for the construction, maintenance, and operation of a 2.8 megawatt (MW) AC solar photovoltaic electric generating facility located on a 48.44 acre parcel located south of Haddam Quarter Road and north of Johnson Lane in Durham, Connecticut (Town Parcel ID #18-22). (Applicant 1, p. 4, Attachment 5)

2. Haddam Quarter Solar, LLC is a wholly owned subsidiary of Louth Callan Renewables, a Connecticut limited liability company with its principal place of business at 921 Thrall Avenue, Suffield, Connecticut. (Applicant 1, pp. 1-2)

3. The Applicant would partner with Madison Energy Investments (MEI) to finance the project. Once the project is operational, MEI would become the long-term owner of the facility. MEI has an office in New York and finances and owns solar generation projects across the United States. (Applicant 7; Tr. 1, pp. 49-50, 79-81)

4. The party in this proceeding is the Applicant. (Transcript 1, September 28, 2021, 2 p.m. [Tr. 1], p. 5)

5. The purpose of the proposed project is to contribute to the state's efforts to promote the deployment of clean renewable energy sources. (Applicant 5, response 8, response 24)

6. The proposed project would generate renewable electrical energy from solar power. Solar power is a Class I renewable energy source. (Applicant 1, p. 7; CGS § 16-1(a)(20))

7. The proposed project is prepared to bid into the State's Feed-in-Tariff (FIT) program established under Public Act 19-53 and administered by the Public Utilities Regulatory Authority (PURA). (Applicant 5, response 9)

8. The State legislature established a renewable energy policy under CGS §16a-35k that encourages the development of renewable energy facilities to the maximum extent possible within the State of Connecticut. (CGS § 16a-35k)

9. Pursuant to C.G.S. § 16-50*l* (b), public notice of the filing of the application to the Council was published in The Middletown Press on July 1 and 2, 2021. (Applicant 2)

10. Pursuant to C.G.S. § 16-50*l* (b), notice of the application was provided to all abutting property owners on or about July 1, 2021. Certified mail receipts from all abutting property owners were received. (Applicant 1, Attachment 4; Applicant 5, response 1)

11. On July 9 and 15, 2021, the Applicant provided notice to all federal, state and local officials and agencies listed in C.G.S. § 16-50*l* (b). (Applicant 1, Attachment 2)

Procedural Matters

12. On March 10, 2020, Governor Lamont issued a Declaration of Public Health and Civil Preparedness Emergencies, proclaiming a state of emergency throughout the state as a result of the COVID-19 pandemic. (Council Administrative Notice Items No. 78)

13. On March 12, 2020, Governor Lamont issued Executive Order No. (EO) 7 ordering a prohibition of large gatherings, among other orders and directives. (Council Administrative Notice Item No. 78)

14. On March 14, 2020, and as subsequently extended, Governor Lamont issued EO 7B ordering suspension of in-person open meeting requirements of all public agencies under CGS §1-225. The Freedom of Information Act (FOIA) defines "meeting" in relevant part as "any hearing or other proceeding of a public agency." (Council Administrative Notice Item No. 78; CGS §1-200, *et seq.* (2021))

15. EO 7B expired on June 30, 2021. Public Act (PA) 21-2 took effect on July 1, 2021. Section 149 permits public agencies to hold remote meetings under FOIA and the Uniform Administrative Procedure Act until April 30, 2022. (Council Administrative Notice Item No. 78)

16. PA 21-2 allows public agencies to hold remote meetings provided that:
    a) The public has the ability to view or listen to each meeting or proceeding in real-time, by telephone, video, or other technology;
    b) Any such meeting or proceeding is recorded or transcribed and such recording or transcript shall be posted on the agency's website within seven (7) days of the meeting or proceeding;
    c) The required notice and agenda for each meeting or proceeding is posted on the agency's website and shall include information on how the meeting will be conducted and how the public can access it any materials relevant to matters on the agenda shall be submitted to the agency and posted on the agency's website for public inspection prior to, during and after the meeting; and
    d) All speakers taking part in any such meeting shall clearly state their name and title before speaking on each occasion they speak.

    (Council Administrative Notice Item No. 78)

17. On July 13, 2021, the Council sent a letter to the State Treasurer, with a copy to the Chief Elected Official of the Town stating that $25,000 was received from the Applicant and deposited in the Office of State Treasurer's Municipal Participation Account for use by the Town to apply for a portion of the funds if they become a party or intervenor to the proceeding, pursuant to CGS §16-50bb. (Record)

18. During a regular Council meeting on July 29, 2021, the application was deemed complete pursuant to Regulations of Connecticut State Agencies (R.C.S.A.) § 16-50*l*-1a and the public hearing schedule was approved by the Council. (Record)

19. On July 30, 2021, the Council issued a Protective Order related to the disclosure of financial terms contained within the lease agreement for the proposed site, pursuant to C.G.S. §1-210(b). (Applicant 4; Record)

20. Pursuant to PA 21-2 and C.G.S. §16-50m, on July 30, 2021, the Council sent a letter to the Town of Durham (Town) to provide notification of the scheduled public hearing via Zoom conferencing and to invite the municipality to participate. (Record)

21. Local zoning regulations do not apply to facilities under the exclusive jurisdiction of the Council. Pursuant to CGS §16-50x, the Council has exclusive jurisdiction over electric generating facilities throughout the state. It shall consider any location preferences or criteria provided by the host municipality as the Council shall deem appropriate. (CGS §16-50x (2021))

22. Pursuant to PA 21-2 and C.G.S. §16-50m, the Council published legal notice of the date and time of the remote public hearing via Zoom conferencing in The Middletown Press on August 4, 2021. (Record)

23. The Council's Hearing Notice did not refer to a public field review of the proposed site. Field reviews are not an integral part of the public hearing process. The purpose of a site visit is an investigative tool to acquaint members of a reviewing commission with the subject property. (Record; Council Administrative Notice Item Nos. 80 and 81)

24. On August 19, 2021, in lieu of an in-person field review of the proposed site, the Council requested that the Applicant submit photographic documentation of site-specific features into the record intended to serve as a "virtual" field review of the site. On September 9, 2021, the Applicant submitted such information in response to the Council's interrogatories. (Record; Applicant 5, Response 41)

25. On August 25, 2021, the Council held a pre-hearing teleconference on procedural matters for parties and intervenors to discuss the requirements for pre-filed testimony, exhibit lists, administrative notice lists, expected witness lists and filing of pre-hearing interrogatories. Procedures for the remote public hearing via Zoom conferencing were also discussed. (Council Pre-Hearing Conference and remote hearing procedure Memoranda, dated August 19, 2021)

26. On September 14, 2021, in compliance with R.C.S.A. § 16-50j-21, the Applicant installed a four-foot by six-foot sign along Johnson Lane, adjacent to the subject property. The sign presented information regarding the project and the Council's public hearing. (Applicant 6)

27. Pursuant to C.G.S. § 16-50m, after giving due notice thereof, held a remote public hearing on September 28, 2021, beginning with the evidentiary session at 2:00 p.m. and continuing with the public comment session at 6:30 p.m. via Zoom conferencing. The Council provided information for video/computer access or audio only telephone access. (Council's Hearing Notice dated July 30, 2021; Tr. 1, p. 4; Transcript 2, September 28, 2021, 6:30 p.m. [Tr. 2], p. 4)

28. In compliance with PA 21-2:
    a) The public had the ability to view and listen to the remote public hearing in real-time, by computer, smartphone, tablet or telephone;
    b) The remote public hearing was recorded and transcribed, and such recording and transcript were posted on the Council's website on September 28, 2021 and October 15, 2021 respectively;
    c) The Hearing Notice, Hearing Program, Citizens Guide for Siting Council Procedures and Instructions for Public Access to the Remote Hearing were posted on the agency's website;
    d) The record of the proceeding is available on the Council's website for public inspection prior to, during and after the remote public hearing; and

e) The Council, parties and intervenors provided their information for identification purposes during the remote public hearing.

(Hearing Notice dated July 30, 2021; Tr. 1; Tr. 2; Record)

Municipal Consultation

29. On January 26, 2020, the Applicant consulted with the Town First Selectwoman, Laura Francis, regarding the proposed project. Several updates were provided as the project was designed. (Applicant 1, pp. 7-8)

30. On January 26, 2021, the Applicant submitted the technical report to the Town. (Applicant 1, p. 8)

31. The Applicant subsequently appeared at a publicly noticed Virtual Public Information Meeting (VPIM) on March 3, 2021 that included the Town Planning and Zoning Commission (PZC), Inland Wetland and Watercourses Agency, and Board of Selectmen. Notice of the VPIM was published in The Middletown Press and was mailed to 21 project abutters. (Applicant 1, p. 8)

32. The March 3, 2021 VPIM was attended by approximately 80 people including Town officials, Applicant representatives and the general public. (Applicant 1, p. 8)

33. A second VPIM was held on April 22, 2021 hosted by the PZC. At this meeting, the Applicant described modifications to the project in response to concerns from residents that included, but were not limited to, the relocation of the access drive, reduction in the project footprint, an alternative fence design (farm fence) and landscaping along Johnson Lane. (Applicant 1, p. 8)

34. Since the filing of notice to the abutters on July 1, 2021, two abutters contacted the Applicant via email requesting additional information on the project. (Applicant 5, response 2)

35. On October 22, 2021, the PZC submitted comments to the Council requesting 8 to 10-foot landscape trees along Johnson Road and possible elimination of the interconnection utility poles by using an underground installation. (Record)

36. 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 CGS § 22a-20a because it uses non-emitting and non-polluting renewable sources. Thus, Environmental Justice does not apply to the facility, and an EJPPP is not required. (Applicant 1, pp. 11, 15; CGS § 22a-20a)

State Agency Comments

37. Pursuant to C.G.S. § 16-50j (g), on July 30, 2021, the following state agencies were solicited by the Council to submit written comments regarding the proposed facility: Department of Energy and Environmental Protection (DEEP); Department of Public Health (DPH); Council on Environmental Quality (CEQ); PURA; Office of Policy and Management (OPM); Department of Economic and Community Development (DECD); Department of Agriculture (DOAg); Department of Transportation (DOT); Connecticut Airport Authority (CAA); Department of Emergency Services and Public Protection (DESPP); Department of Consumer Protection (DCP); Department of Labor (DOL); Department of Administrative Services (DAS); and State Historic Preservation Office (SHPO). (Record)

38. The Council received comments from CEQ[1] on July 28, 2021, DOAg[2] on September 16, 2021 and DEEP[3] on October 28, 2021. These comments are addressed in the Environmental Considerations section of this document. (Record)

39. On October 13, 2021, the DOT Bureau of Engineering and Construction submitted correspondence indicating that they have no comments on the proposed project. (DOT comments received October 13, 2021)

40. 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. 84 – *Corcoran v. Connecticut Siting Council*, 284 Conn. 455 (2007)

41. No other state agencies commented on the proposed project. (Record)

State of Connecticut Planning and Energy Policy

42. Section 51 of Public Act (PA) 11-80 requires that DEEP prepare a Comprehensive Energy Strategy (CES) every three years that reflects the legislative findings and policy stated in CGS §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. 48 – Docket No. 497, Finding of Fact #48; CGS §16a-3d)

43. On February 8, 2018, DEEP issued the 2018 Comprehensive Energy Strategy (2018 CES). Guided by the long-term vision of transitioning to a zero-carbon economy, the 2018 CES highlights eight key strategies to guide administrative and legislative action over the next several years. Specifically, strategy No. 3 is "Grow and sustain renewable and zero-carbon generation in the state and region." (Council Administrative Notice Item No. 56 – 2018 CES, p. 14)

44. The proposed facility will contribute to fulfilling the State's Renewable Portfolio Standard and Global Warming Solutions Act as a zero emission Class I renewable energy source. (Council Administrative Notice Item No. 54 – 2018 CES)

45. CGS §16-245a establishes Connecticut's *Renewable Portfolio Standards* (*RPS*). Currently, RPS requires that 24 percent of Connecticut's electricity usage be obtained from Class I renewable resources by 2022. The percentage increases annually and reaches 40 percent by 2030. (CGS §16-245a)

1 CEQ-Comments-Doc-505-corrected.pdf
2 do505-sacrcdpi-doag-20210917.pdf (ct.gov)
3 do505-sacrcdpi-deep-20211029.pdf (ct.gov)

46. The 2018 CES notes that, "Most recent analyses indicate that there should be adequate Class I resources to meet Connecticut's Class I Renewable Portfolio Standards (RPS) goals in 2020*."
*This was based on the "20 percent Class I by 2020" requirement that was in place at the time the 2018 CES was prepared.
(Council Administrative Notice Item No. 54 – 2018 CES, p. 112)

47. The Global Warming Solutions Act (PA 08-98) sets a goal of reducing greenhouse gas (GHG) emissions by 80 percent below 2001 levels by 2050. (CGS §22a-200)

48. Section 7 of PA 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. 70 – Climate Change Preparedness Plan)

49. Governor Lamont's 2019 Executive Order No. 3 declares the state's goal to reach 100 percent carbon free electricity by 2040. (Governor Lamont's Executive Order No. 3, September 3, 2019)

Competitive Energy Procurement

50. The project would participate in the FIT program, established under Public Act 19-53 and administered by PURA, that allows the public utilities to purchase the energy from renewable power sources and the associated Renewable Energy Credits (RECs) under a 20-year contract. The FIT program replaced the Low/Zero Emissions Renewable Energy Credit program. (Applicant 5, response 6, response 10)

51. The first FIT auction is scheduled for February 2022. (Tr. 1, pp. 42-43, 96)

52. The Applicant anticipates Eversource would purchase the energy/RECs associated with the project and that the entire project output would be virtually net metered. (Applicant 5, response 7, response 9)

53. Under the FIT contract with Eversource, Virtual Net Metering credits would be awarded to the Town and Regional School District 13. (Tr. 1, pp. 17-18, 42-43, 94-96)

54. The project would provide capacity to the local distribution system, thereby reducing demand from other energy sources. (Applicant 5, response 24(c))

Public Benefit

55. Pursuant to CGS §16-50p(c), 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. Public benefit exists if the Council finds and determines a proposed electric generating facility contributes to forecasted generating capacity requirements, reduces dependence on imported energy resources, diversifies state energy supply mix and enhances reliability. (CGS §16-50p(c); *Preston v. Connecticut Siting Council*, 20 Conn. App. 474 (1990); *Preston v. Connecticut Siting Council*, 21 Conn. App. 85 (1990); Council Administrative Notice Item No. 48 – Docket No. 497, Finding of Fact #61)

56. Pursuant to Public Act 98-28, An Act Concerning Electric Restructuring, generators of electricity may compete with each other for the development of electric generation. (Council Administrative Notice Item No. 48 – Docket No. 497, Finding of Fact #62)

57. Created by the Federal Energy Regulatory Commission (FERC) 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. No. 48 – Docket No. 497, Finding of Fact #63)

58. ISO-NE operates the power system and the competitive wholesale electric markets so that the lowest cost resources are used first to meet consumer demand. However, ISO-NE's primary responsibility is electric reliability. (Council Administrative Notice Item No. 48 – Docket No. 497, Finding of Fact #64)

59. 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. 48 – Docket No. 497, Finding of Fact #65)

Resource Adequacy

60. ISO-NE holds an annual forward capacity market auction (FCA) to acquire the power system resources needed to meet projected demand for the New England region in three years' time. The 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 plants, renewable generation, imports, and 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. 38 – ISO-NE FCA#13 Press Release dated February 28, 2019; Council Administrative Notice Item No. 40 – ISO-NE FCA #14 Press Release dated February 18, 2020)

61. According to ISO-NE's 2019 Regional System Plan (2019 RSP), "Sufficient resources are projected for New England through 2028 to meet the resource adequacy planning criterion, assuming no additional retirements and the successful completion of all new resources that have cleared the FCM. The planning analysis accounts for new resource additions that have responded to market improvements, state policies, and resource retirements. The ISO is committed to procuring adequate demand and supply resources through the FCM and expects the region to install adequate resources to meet the physical capacity needs that the [Installed Capacity Requirements] (ICRs) will define for future years." (Council Administrative Notice Item No. 23 – 2019 RSP, p. 76)

Net Load Forecasts

62. In this context, ISO-NE Net Load Forecast means ISO-NE's gross 50/50 forecast minus behind the meter solar PV and minus energy efficiency effects. (Council Administrative Notice Item No. 26 – 2020 CELT Report, Section 1.1 – Forecast and Capabilities with Footnotes)

63. The ISO-NE 2020 Net Load Forecast (2020 Net Forecast) has a compound annual growth rate of -0.16 based on 25,125 MW for 2020 and 24,755 MW for 2029. (Council Administrative Notice Item No. 26 – 2020 CELT Report, Section 1.1 – Forecast and Capabilities)

Generating Capacity Retirements in New England

64. The following generating resources have been identified by ISO-NE as retired.

Power Plant	Fuel	Summer Capacity	Status
Vermont Yankee	Nuclear	604 MW	Retired
Mount Tom	Coal	143 MW	Retired
Salem Harbor	Coal and Oil	749 MW	Retired
Pilgrim	Nuclear	677 MW	Retired
Brayton Point	Coal and Oil	1,535 MW	Retired
Norwalk Harbor	Oil	342 MW	Retired
Bridgeport Harbor No. 3	Coal	383 MW	Retired[4]
Mystic No. 7	Oil/Gas	573 MW	Retired
Total		**5,006 MW**	

(Council Administrative Notice Item No. 48 – Docket No. 497, Finding of Fact #72; Council Administrative Notice Item No. 23 – 2019 RSP, pp. 10, 116; Council Administrative Notice Item No. 27 – ISO-NE 2019 Regional Electricity Outlook, p. 18; Council Administrative Notice Item No. 21 – ISO-NE 2018 Operational Fuel-Security Analysis, p. 13)

65. The following generating resources are considered at "at risk for retirement" by ISO-NE in coming years. These "at risk" power plants are listed below.

Power Plant	Fuel	Summer Capacity
Yarmouth Nos. 1-4	Oil	808 MW
Merrimack No. 1-2	Coal	438 MW
Newington No. 1	Oil/Natural Gas	400 MW
Schiller Nos. 4&6	Coal	95 MW
Canal Nos. 1&2*	Oil	1,125 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	480 MW
New Haven Harbor*****	Oil/Natural Gas	347 MW
Total		**4,531 MW**

*Canal No. 1 is oil-fired only. Canal No. 2 is oil/natural gas.
**While primarily fueled by natural gas, this is a steam turbine unit.
***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.
*****This is the steam unit. Also, listed is the summer MW rating.
(Council Administrative Notice Item No. 27 – ISO-NE 2019 Regional Electricity Outlook, p. 18)

New England Reliability

66. New England's electric power grid is 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. Most of the transmission lines are relatively short and networked as a grid. The electrical performance in one part of the system affects all areas of the system. Thus, Connecticut and the rest of the ISO-NE

[4] Council Docket No. 27, Surrender of Certificate, dated October 29, 2021.

region are inextricably interconnected and rely on each other for a reliable electricity system. (Council Administrative Notice Item No. 23 – 2019 RSP, p. 27; Council Administrative Notice Item No. 48 – Docket No. 497, Finding of Fact #75)

67. In addition to ISO-NE's winter energy concerns, system reliability is comprised of two aspects: resource adequacy and transmission security. Resource adequacy means having sufficient resources to meet load at all times. Transmission security means having a system than can withstand contingencies such as the loss of a transmission line, or successive losses of multiple transmission lines, or the loss of a major generating plant, during a time of high system load. (Council Administrative Notice Item No. 48 – Docket No. 497, Finding of Fact #76)

68. 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. 48 – Docket No. 497, Finding of Fact #77)

69. Net ICR (NICR) is the installed capacity requirement for New England net of capacity credits from the Hydro Quebec interconnection and is lower than ICR. Either of these two metrics, ICR or NICR, can be considered the reliability need for capacity resources in New England. (Council Administrative Notice Item No. 48 – Docket No. 497, Finding of Fact #78)

70. ISO-NE computes and annually updates NICR for the New England Region. There is no separate NICR for Connecticut. (Council Administrative Notice Item No. 48 – Docket No. 497, Finding of Fact #79)

ISO-NE's FCA

71. While NICR is a reliability "target" for New England, the FCA rules allow the New England region to acquire more or less capacity (in MW) than NICR. (Council Administrative Notice Item No. 48 – Docket No. 497, Finding of Fact #80)

72. Capacity resources that clear the auction receive a Capacity Supply Obligation (CSO). A CSO requires the capacity resource to bid into the day-ahead energy market during the 12-month Capacity Commitment Period (CCP), which begins roughly three years after the auction is held. For example, for the fifteenth FCA (FCA #15), resources that cleared in February 2021 are committed to the June 1, 2024 through May 31, 2025 CCP. (Council Administrative Notice Item No. 48 – Docket No. 497, Finding of Fact #81; Council Administrative Notice Item No. 42 – ISO-NE FCA #15 Press Release dated February 11, 2021)

Solar Facility Benefit

Applicant's FCA Participation

73. The Applicant did not participate in ISO-NE's FCA#15 that was conducted during February 2021 and has no plans to participate in future FCAs. (Applicant 5, response 13)

74. For solar resource capacity, ISO-NE counts a percentage of a project's nameplate capacity (i.e. the MW it should produce under optimal conditions) and its measurable day-to-day performance,

which can differ significantly due to the weather-dependent nature of solar resources. Additionally, the solar peak and the grid/system peaks are not necessarily coincident. For example, the summer solar peak could occur roughly in the 12:00 p.m. to 1:00 p.m. time period while the summer peak hours for the grid for reliability purposes is roughly in the 2:00 p.m. to 6:00 p.m. time period. (Council Administrative Notice Item No. 48 – Docket No. 497, Finding of Fact #81)

75. Securing a CSO is sufficient but not necessary to demonstrate a resource's necessity for electric reliability. (Council Administrative Notice Item No. 48 – Docket No. 497, Finding of Fact #84)

Competitive Markets Benefit

76. The project would participate in the first FIT competitive bid auction in February 2022 that would allow for the development of low and zero emission generation technologies with behind the meter and front of meter attributes at the most cost-effective price. In light of Governor Lamont's Executive Order No. 3 to decarbonize the state's electric generation fleet and project selection in a competitive auction, the project is necessary for the development of a competitive market for electricity. (Applicant 1, p. 7; Applicant 5, response 24; Tr. 1, pp. 94-96)

Forecast Capacity Benefit

77. Given the small size of the project and its proposed connection to the distribution system as opposed to the transmission system, the project would not directly factor into the respective calculation for forecasted generation capacity in ISO-NE territory. Notwithstanding, the project would reduce demand for power on the distribution circuit to which it interconnects. (Applicant 5, response 24(c))

Domestic Energy Supply Benefit

78. The proposed project would represent a clean, local source of renewable energy that will help meet the state's energy requirements domestically. Thus, it would reduce Connecticut's reliance on imported energy sources. (Applicant 5, response 24d)

79. The 2019 RSP notes that, "Risks to current and future power system reliability hinges on the availability of fuel to New England generators so that they can provide the electric energy needed for meeting system demand... Renewable generators generally can help supply the demand for energy and displace the traditional fuels that have been generating it, but the output of wind and solar facilities depends on the weather and time of day. For example, solar panels can reduce the consumption of natural gas and oil during sunny winter days, so more oil and gas are available later to generate electricity to meet the daily winter peak demand…" (Council Administrative Notice Item No. 23 – 2019 ISO-NE RSP, p. 130)

Fuel Diversity Benefit

80. The proposed project would help to diversify the state's energy supply mix by adding another renewable energy resource into the state's portfolio of energy sources in light of renewable energy being currently out supplied by natural gas and nuclear resources. (Applicant 5, response 24e; DEEP comments dated October 28, 2021)

81. On March 15, 2019, the six New England governors issued a joint statement announcing a commitment to regional cooperation on energy issues and to work in coordination with ISO New

England and through the New England States Committee on Electricity. (Council Administrative Notice No. 23 – 2019 ISO-NE RSP, p. 173)

82. The New England Governors and Eastern Canadian Premiers (NEG ECP) focus on clean energy sources and regional opportunities to reduce greenhouse gas emissions through the Regional Climate Change Action Plan. Among other provisions, they acknowledge extreme temperatures in recent years have caused spikes in energy demand, resulting in high costs for consumers and an increased reliance on energy sources with high GHG emission rates. This is attributable to a system with limited energy diversification and storage, particularly during winter. They also acknowledge diversifying the resource mix and using clean energy sources during extreme-temperature events will decrease energy costs and increase environmental benefits. (Council Administrative Notice Item No. 23 – 2019 ISO-NE RSP, pp. 173-174)

83. The NEG ECP resolved the following:
a) Encourage policies that diversify resources and target affordable clean energy sources, including during peak periods, is important;
b) Strengthen and diversify the generation resource mix and storage capabilities to reduce energy costs and improve system resilience during periods of extreme temperatures;
c) Include onshore and offshore wind, large hydro, demand response, energy efficiency, and advanced battery and storage systems as clean energy resources to serve winter peaks and reduce GHG emissions; and
d) Research policies to reduce barriers and improve operational standards for encouraging a greater reliance on energy storage, resource diversity, and the use of clean energy.
(Council Administrative Notice Item No. 23 – 2019 ISO-NE RSP, pp. 173-174)

Electric Reliability Benefit

84. The proposed project would increase the reliability of overall electric grid by reducing demand for power on the distribution circuit that it is interconnected to. This would reduce the demand from centrally-located generation facilities, and should serve to alleviate stress on the grid. (Applicant 5, response 24f)

Project Alternatives

85. The Applicant considered the following factors in its site selection process:
a) Parcel availability;
b) Parcel size and suitability;
c) Proximity to existing electrical infrastructure;
d) Compatibility with surrounding land use; and
e) Environmental resource constraints.
(Applicant 1, pp. 4-5)

86. Due to complexities of selecting a site and the related interconnection analysis required to determine if a site is viable, the proposed site was the only site examined by the Applicant in the Durham area as it met the Applicant's suitability criteria. (Applicant 1, pp 4-5; Tr. 1, p. 14-15)

87. The Applicant initially proposed a project with a larger footprint. An alternative project with a smaller footprint was developed during the Town consultation process. (Applicant 1a -Technical Report; Applicant 1, Attachment 6)

Site

88. Pursuant to RCSA §16-50j-2a(29), "Site" means a contiguous parcel of property with specified boundaries, including, but not limited to, the leased area, right-of-way, access and easements on which a facility and associated equipment is located, shall be located or is proposed to be located. (RCSA §16-50j-2a(29))

89. Pursuant to a lease agreement with the property owner, Newton Family Trust, the Applicant proposes to construct the solar facility on an approximate 10.5-acre site[5] located within an approximately 48.44-acre parcel south of Haddam Quarter Road and north of Johnson Lane in Durham (Town Parcel ID #18-22). The property has historically been used for agriculture. (Applicant 1, Attachment 5)

90. Pursuant to CGS §16-50p(g), the Council has no authority to compel a parcel owner to sell or lease property, or portions thereof, for the purpose of siting a facility. (Council Administrative Notice Item No. 84 - *Corcoran v. Connecticut Siting Council*, 284 Conn. 455 (2007))

91. The host parcel is zoned Farm Residential and contains open fields, forest and wetlands. Hersig Brook extends through the middle of the property. A small shed and a barn are located adjacent to Haddam Quarter Road. An electric distribution line on wooden poles crosses the property in an east-west direction on the north side of Hersig Brook. (Applicant 1, p. 16, Attachment 9); DEEP comments dated October 28, 2021)

92. Site topography ranges from 305 to 335 feet above mean sea level (amsl). (Applicant 1, p. 16)

93. The host parcel abuts Haddam Quarter Road to the north and Johnson Lane to the south. Abutting land use includes undeveloped land, recreational and residential. (Applicant 1, p. 13, Attachment 10)

94. The solar facility would be constructed in an open field area on the south side of the property, south of Hersig Brook and north of Johnson Lane. (Applicant 1, p. 4)

95. The Applicant proposes to demarcate and maintain a post-construction walking path that extends from Johnson Lane, follows the north perimeter fence to an existing farm cart path that extends north through the wetland corridor towards Haddam Quarter Road. The walking path would be a mowed grass aisle accessible to the public. (Applicant 1, Attachment 6, Site Plan OP-1; Tr. 1, pp 18-21, 50-51)

Project Description

Solar Array

96. The proposed project consists of 7,434 solar panels (Trina DuoMAx Twin) rated at approximately 465 Watts installed on a fixed, steel post racking system. (Applicant 1, p. 5)

97. The panels would be oriented facing south at a 30 degree angle, extending to an approximate height of ten feet above grade and approximately three feet above grade at the bottom edge. (Applicant 1, p. 11, Attachment 6)

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[5] The lease agreement is for the entire 48.44 acre parcel with the provision that a lease amendment may be executed for the portion of the parcel that will be developed for the project.

98. The panels would be arranged in linear rows, separated by 15-foot wide vegetated aisles. (Applicant 1, Attachment 6)

99. Two 10-foot by 20-foot concrete pads would be installed within the array area to support project inverters, switchgear, and transformers. (Applicant 1, Attachment 6)

100. The site would be enclosed by a seven-foot tall farm style fence. (Applicant 1, Attachment 6)

101. The Applicant proposes to apply a seed mix composed of primarily of fescues and bluegrass with a small clover component (4.5%). (Applicant 1, Attachment 6, Site Plan DN-1)

Site Access

102. Two 15-foot wide gravel access drives would be constructed, each extending south from Johnson Lane. The east access drive would extend approximately 80 feet into the site and would include two gravel vehicle turnaround lanes. The west access drive would extend for approximately 150 feet, generally running parallel to Johnson Lane, and would also include a turnaround area. (Applicant 1, Attachment 6)

Electrical Interconnection

103. Wiring from the panels would extend along the underside of the panels, attached to the racking system with brackets. Wiring between rows and to the inverters would be installed underground within a trench. An underground line would extend from the electrical pad on the east end of the site to the electrical pad on the west end of the site. (Applicant 1, Attachment 6, Attachment 7; Applicant 5, response 25)

104. The interconnection would require seven new utility poles, three owned by the Applicant and four owned by Eversource. One of the new poles would be located along Johnson Lane and the remaining poles would be along the west end of the site, adjacent to the proposed west access drive and electrical equipment pad. (Applicant 1, Attachment 6; Tr. 1, pp 67-69, 98)

105. Eversource requires overhead lines for the interconnection and separate poles for the utility-owned disconnect, utility-owned recloser, utility-owned primary meter and utility telemetry equipment. (Applicant 5, response 29; Tr. 1, pp. 68-69)

106. The Applicant could reduce the number of poles on the customer side of the interconnection by using pad-mounted relay and metering equipment. (Tr. 1, pp. 97-98)

107. From the interconnection point on Johnson Lane, a 3-phase line would be installed, extending west for approximately 2,350 feet. To accommodate the 3-phase line, two wires on new supporting cross arms would be added to the existing utility poles. (Applicant 5, response 28; Tr. 1, p. 99)

108. The Applicant has completed the interconnection review/system impact study with Eversource. The study included a review by ISO-NE, as applicable. (Applicant 5, response 26, response 27; Tr. 1, pp. 44-47)

Project Construction

109. The proposed construction sequence would include, but not be limited to, the following:
   a) Preconstruction- on-site meeting and site flagging;
   b) Phase 1 – Clearing to develop site access, establishment of erosion controls, construction of diversion swales/level spreaders, and establish temporary sediment traps;
   c) Phase 2 – install electrical infrastructure including equipment pads and conduit; install racking posts and framing, install solar panels, followed by site seeding, conversion of a sediment trap into a permanent stormwater basin, installation of landscaping and final site stabilization.

   (Applicant 1, Attachment 6)

110. A narrow wooded buffer extends along the edge of the field and Johnson Lane. The trees in this area are composed of red maple, hickory and sugar maple and are generally 15" diameter or less at breast height (dbh) although a few are 24" dbh or greater. Some invasive species such as bittersweet and Japanese knotweed are also present. Some of the trees within this narrow buffer are within the Town road right-of-way. (Applicant 1, Attachment 9, p. 5; Tr. 1, p. 51; DEEP comments dated October 28, 2021)

111. The Applicant would selectively clear trees on their side of the property boundary to reduce project shading. The exact number of trees to be removed by the Applicant is unknown as a parcel boundary survey would need to be completed prior to tree removal in this area. The Town has already removed some of the large trees along Johnson Lane due to recent storm damage and to remove hazardous dead trees. (Applicant 1, Attachment 9, p. 5; Tr. 1, p. 28; DEEP comments dated October 28, 2021)

112. The taller trees on the Town's side of the wooded buffer that remain could cause some project shading but the Applicant determined that the shading would not lead to unacceptable energy loss. (Tr. 1, pp. 29-30)

113. The project was designed to result in minimal alteration to existing on-site slopes. Most of the site has gentle to moderate slopes except for a small knoll in the eastern portion of the site where the slope reaches 20-25 percent. The proposed racking system can be installed on this slope without the need for grading. (Applicant 1, Attachment 6; Attachment 9, p. 20; Tr. 1, pp. 58-59; DEEP comments dated October 28, 2021)

114. Approximately 688 cubic yards (cy) of cut and 217 cy of fill would be required for the project, with a net cut of 471 cy, most of which is associated with the construction of the stormwater management system. Excess cut material would be distributed within the site, away from the wetland and watercourses. (Applicant 5, response 47)

115. If approved, construction would commence in the second quarter of 2022 with site completion and operation by the fourth quarter of 2022. (Applicant 1, p. 6)

116. Typical construction work hours would be Monday through Saturday, 7:00 a.m. to 5:00 p.m. (Applicant 1, p. 11)

Facility Operation

117. The total AC power output (or nameplate rating) of the project would be approximately 2.8 MW at the point of interconnection, taking into account losses such as module and wiring loss. (Applicant 1, p. 1; Applicant 5, response 17)

118. The project has a capacity factor of 21.6 percent. (Applicant 5, response 22)

119. The maximum efficiency of the solar panels is 20 percent. As the solar panels age, power output would decline by roughly 0.45 percent per year. (Applicant 5, response 18, response 19)

120. A battery storage system is not proposed for this project at this time. (Tr. 1, p. 32)

121. The project cannot act as a microgrid as it is only designed to export power to the local distribution system. Microgrids are generation sources designed to act independently from grid connections to power specific buildings during emergencies. (Applicant 5, response 20)

Operations and Maintenance

122. It is anticipated that the facility would require mowing and routine maintenance of the electrical equipment once per year. Annual maintenance would typically involve two technicians for one day. (Applicant 1, Attachment 9, pp. 5-6)

123. The Applicant does not plan to remove snow from the solar panels. MEI owns several projects in northern Minnesota which perform well during the winter months. (Applicant 1, Attachment 9, p. 5; Tr. 1, pp. 80-81)

124. The project is remotely monitored for performance. Any abnormalities, such as a damaged panel, would be detected and personnel would be dispatched to the site for assessment and repairs. (Tr. 1, pp. 79-80)

125. Spare solar panels would not be stored on-site. (Applicant 5, response 45)

126. A site-specific Operations and Maintenance Plan would be prepared if the project is approved. (Applicant 1, p. 10)

Project Decommissioning

127. The estimated project life is 25 years. The property lease contains a provision for a lease extension. (Applicant 1, Attachment 7)

128. The Applicant provided a decommission plan including infrastructure removal plans and site restoration plans consistent with provisions of the lease agreement with the property owner. All above and below ground infrastructure would be removed, recycled or disposed of, as applicable, and the site restored to its original state. (Applicant 1, Attachment 7)

129. The Applicant obtained Toxicity Characteristic Leaching Procedure (TCLP) test results from the manufacturers of the solar panels and, per the test results, the solar panels would not be characterized as hazardous waste at the time of disposal. (Applicant 5, response 33)

Public Safety

130. The proposed project would be constructed in compliance with all applicable Federal and State regulations (e.g. National Electrical Code, the National Electrical Safety Code, National Fire Protection Association codes). (Applicant 1, Attachment 9)

131. The solar facility is monitored remotely for performance and has relay protection mechanisms that can isolate sections of the solar array if a problem is detected. The Project can also be shut down at the inverter level or at the riser pole locations. (Applicant 5, response 21; Tr. 1, pp. 85-86, 102-103)

132. The Applicant would meet and conduct a site walk with local emergency responders prior to the commencement of site operation. (Applicant 5, response 11)

133. The solar field would be enclosed by a seven-foot high fence[6]. The main entrance to the facility would be gated, limiting access solely to authorized personnel. (Applicant 1, Attachment 6)

134. The Applicant intends to meet with the DEEP Dam Safety program during the Stormwater Permit process to determine if the proposed water quality basin would be considered a dam. (Applicant 45, response 45)

135. By letter dated August 11, 2020, the Federal Aviation Administration issued Determinations of No Hazard to Air Navigation for the proposed project. No marking or lighting is required for aviation safety. A glare analysis is not required for the proposed project. (Applicant 1, Attachment 9, p. 27)

Noise

136. The proposed facility would be considered a Class C (industrial) noise emitter under DEEP Noise Control Standards. The DEEP Noise Limit for a Class C source emitting to a residential (Class A) receiver is 61 dBA during the daytime and 51 dBA during the nighttime. (Applicant 1, Attachment 9, p. 26; RCSA §22a-69-3.5)

137. Noise from the Project would be primarily from the transformers that would generate a maximum sound level of 61 dBA at a distance of one foot. By the Inverse Square Law, the projected noise level at the nearest property line (109 feet to the south) would not exceed 21.0 dBA during the day. Most noise would be produced during peak production, typically from 10:00 a.m. to 3:00 p.m. The project is inactive at night, producing no significant noise. (Applicant 1, Attachment 9, p. 28; Tr. 1, 9, pp. 55-58; 104-105)

138. Construction-related noise is exempt from DEEP Noise Control Standards. (RCSA §22a-69-108(g))

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[6] Section 691.4(2) of the National Electrical Code (NEC), 2020 Edition notes that, "Access to PV electric supply stations shall be restricted by fencing or other adequate means in accordance with 110.31…" Section 110.31 notes that for over 1,000 Volts, "…a wall, screen, or fence shall be used…A fence shall not be less than 7 feet in height or a combination of 6 feet or more of fence fabric and a 1 foot or more…utilizing barbed wire or equivalent."

Environmental Considerations

Air Quality

139. The proposed project would comply with DEEP air quality standards. (Applicant 1, p. 10)

140. The solar project would not produce air emissions of regulated air pollutants or greenhouse gases during operation and no air permit would be required. (Applicant 1, p. 10)

141. The proposed solar facility would have a net carbon emissions of approximately 67,120 metric tons of carbon dioxide or about 145.3 percent less than a natural gas-fueled facility over 25 years of operation. An equivalently-sized natural gas fueled electric generating facility would produce about 423,825 metric tons of carbon dioxide over 25 years of operation. (Applicant 5, response 39)

Water Quality

142. The proposed project would meet DEEP water quality standards. It would not consume water during its operation. (Applicant 1, Attachment 9, p. 18)

143. The proposed project would be located within the Federal Emergency Management Agency-designated unshaded Zone X, an area of minimal flooding located outside both the 100-year and 500-year flood zones. (Applicant 1, Attachment 9, pp. 17-18)

144. The project is not located within a DEEP-designated Aquifer Protection Area. (Applicant 1, Attachment 9, p. 18)

145. Groundwater in the area is suitable for human consumption. The Applicant does not anticipate ground water (e.g. well) impacts would result from construction of the project as no blasting is required. (Applicant 1, Attachment 9, pp. 18-19; Applicant 5, response 30)

146. The Applicant developed a Water Quality Protection Plan that includes a Spill Prevention Control Plan (SPCP) and waste collection/disposal and washout area procedures to mitigate any impacts to surface and groundwater resources. The SPCP includes, but is not limited to, a requirement that any refueling occur at least 100 feet from any wetlands/watercourses, and measures for fuel storge and spill response. A waste collection and disposal area would be established in an area away from wetlands and that minimizes travel through the site. A washout station would be established a minimum of 500 feet from wetlands and would include a container or constructed detention area to capture concrete washout. Concrete waste would be collected and disposed of in accordance with disposal regulations/guidelines. (Applicant 5, response 30- Attachment 2)

147. The proposed transformers and inverters would contain a biodegradable insulating oil. (Applicant 1, p. 10)

Stormwater

148. Pursuant to CGS Section 22a-430b, DEEP retains final jurisdiction over stormwater management and administers permit programs to regulate stormwater pollution. DEEP regulations and guidelines set forth standards for erosion and sedimentation control, stormwater pollution control and best engineering practices. (CGS §22a-430b; DEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities. (DEEP-WPED-GP-015)

149. The DEEP Individual and General Permits for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (Stormwater Permit) require implementation of a Stormwater Pollution Control Plan (SWPCP) to prevent the movement of sediments off construction sites into nearby water bodies and to address the impacts of stormwater discharges from a project after construction is complete. In its discretion, DEEP could hold a public hearing prior to approving or denying any Stormwater Permit application. (CGS Section 22a-430b; CGS Section 22a-430(b))

150. The DEEP Stormwater Permit includes project design and stormwater controls specific to solar facilities. These measures are provided in Appendix I - Stormwater Management at Solar Array Construction Projects and include but are not limited to the consideration the orientation of the panels, site slopes, wetland buffers; adjustments to stormwater modeling based on site soil conditions, and documented site inspections. (DEEP-WPED-GP-015)

151. DEEP has the authority to enforce Project compliance with its Individual or General Permit and the SWPCP, including, but not limited to, the installation of site-specific water quality protection measures in accordance with the *2002 Connecticut Guidelines for Soil Erosion and Sediment Control* (2002 E&S Guidelines). (CGS Section 22a-430b)

152. The Council may impose a condition that requires subsequent compliance with DEEP standards and regulations. (Council Administrative Notice No. 82)

153. The project has been designed to comply with the *2004 Connecticut Stormwater Quality Manual* (2004 Stormwater Manual) and the 2002 E&S Guidelines. (Applicant 1, Attachment 9, pp. 18-19)

154. The Applicant's proposed stormwater system is designed to manage the water quality volume through detention and the slow release of water in a manner that would not increase peak flow rates. Existing drainage patterns would be maintained. (Applicant 1, Attachment 9, pp. 19-20)

155. The Applicant designed the stormwater management system to comply with Appendix I by providing stormwater runoff peak attenuation, water quality volume treatment, and erosion and sediment control during construction. (Applicant 1, Attachment 9, pp. 29, 30)

156. The Applicant's stormwater study indicated post-construction flows would be less than pre-construction flows due to the conversion of agricultural land to meadow. (Applicant 1, Attachment 9, pp. 19-20)

157. The stormwater study divided the site into sub-drainage areas to determine the types of stormwater management that is necessary in each area. Two sediment traps are proposed: one in the southeast portion of the construction area and the other in the northwest construction area. All other sub-drainage areas on the site can be controlled using E&S isolation measures such as filter sox. This includes the small steep knoll in the northeast portion of the site. (Applicant 1, Attachment 6- Plan EC-4; Attachment 9, pp. 19-20; Tr. 1, pp. 23-24, 108-109)

158. Two grass-lined diversion swales would be constructed where culverts collect stormwater on the southside of Johnson Lane discharge onto the site. The diversion swales would serve to control water velocity and direct it away from the solar field towards downgradient wetlands. (Applicant 1, Attachment 9, pp. 19-20)

159. A post-construction water quality basin would be constructed at the southeast end of the site. No other permanent stormwater basins are required. (Applicant 1, Attachment 6- Plan GD-1, Attachment 9, pp. 19-20; Tr. 1, pp. 108-109)

160. Runoff from the solar panels would drain off of the side and low edges of the panels, falling onto the vegetated ground surface. Concentrated flows along the lowest panel edge are not expected. (Applicant 1, Attachment 6- Plan GD-1; Applicant 5, response 40)

161. The Applicant met with the DEEP Stormwater Program on October 7, 2021. DEEP commented that the steep knoll on the site (with grades of 20-25 percent) may need to be re-graded to reduce the slope to a range of 5 to 10 percent, or if the knoll remains as is, an Individual Stormwater Permit, rather than a General Stormwater Permit, may need to be filed. The Stormwater Program would revisit this issue once a final design plans have been submitted. (DEEP comments dated October 28, 2021)

162. Upon completion of construction, the site would be stabilized using a mix of grasses selected specifically for solar installations (Ernst Solar Farm Seed Mix), which would create a meadow condition. (Applicant 1, Attachment 9, p. 19)

Wetlands and Watercourses

163. 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.)

164. 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)

165. 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)

166. Under the IWWA:
    a) "Wetlands" means land, which consists of any of the soil types designated as poorly drained, very poorly drained, alluvial, and floodplain by the National Cooperative Soils Survey, as may be amended from time to time, of the Natural Resources Conservation Service of the United States Department of Agriculture;
    b) "Watercourses" means rivers, streams, brooks, waterways, lakes, ponds, marshes, swamps, bogs and all other bodies of water, natural or artificial, vernal or intermittent, public or private, which are contained within, flow through or border the state; and
    c) Intermittent watercourses are delineated by a defined permanent channel and bank and the occurrence of two or more of the following characteristics: (A) Evidence of scour or deposits of recent alluvium or detritus, (B) the presence of standing or flowing water for a duration longer than a particular storm incident, and (C) the presence of hydrophytic vegetation. (CGS §22a-36, *et seq*.)

167. A forested wetland corridor associated with Hersig Brook is located in the central portion of the host property. The site would be constructed to the south and upgradient of the wetland corridor. (Applicant 1, Attachment 9, pp. 9, 16-17)

168. No wetlands or watercourses would be directly impacted by the project. (Applicant 1, Attachment 9, pp. 16-17)

169. In general, the limit of disturbance (LOD) to adjacent wetlands would be approximately 80 feet except for where the proposed temporary sediment traps are located. The wetland buffer from the southeast sediment trap would be 35 feet and the wetland buffer from the northwest sediment trap would be 50 feet. After construction, the outermost 15 feet of the disturbed area would be restored to grassland. (Applicant 1, Attachment 6, Site Plan EC-3, Attachment 9, pp. 16-17)

170. The nearest construction activity is more than 150 feet from Hersig Brook. Hersig Brook is not a DEEP designated cold-water stream habitat. (Applicant 1, Attachment 9, p. 17; Applicant 5, response 36)

171. Once the site is constructed, the solar panels would be a minimum 100 feet from on-site wetlands. The permanent water quality basin would be 50 feet from the wetland. Both of these post-construction wetland buffers comply with DEEP Appendix I. (Applicant 1 Attachment 6 Attachment 6, Site Plan GD-01; DEEP comments dated October 28, 2021)

172. Except for some tree clearing along Johnson Lane, project related work would occur within an existing open field. No forest associated with the wetland corridor would be cleared. (Applicant 1, Attachment 9, pp. 9, 16-17)

173. The Applicant would utilize erosion and sedimentation control measures per the 2002 E&S Guidelines to avoid adverse effects to downgradient wetland resources. (Applicant 1, Attachment 9, p. 17)

Visibility

174. The solar panels are designed to absorb incoming solar radiation and minimize reflectivity such as that only about two percent of the incidental light would be reflected off the panels. (Applicant 1, Attachment 9, p. 27)

175. Generally, year-round views of the project from off-site locations are limited to Johnson Lane and to driveways across from the site that extend upgradient from Johnson Lane to residential properties. These properties have existing forest between the residences and Johnson Lane. (Applicant 1, Attachment 9, p. 27, App. F)

176. Potential seasonal views, when the leaves are off of the deciduous trees, could extend up to approximately 360 feet from the site to the west, south and east. This area includes residences to the west and on the hillside south of Johnson Lane. (Applicant 1, Attachment 9, p. 27, App. F)

177. A landscape plan would be developed to mitigate views of the facility from Johnson Lane. A preliminary landscape plan was developed that includes seven species of native trees and shrubs (5 deciduous, 2 evergreen) that would be interspersed with any remaining trees/vegetation that remains within the Town's property along Johnson Lane. (Applicant 1, Attachment 9, p. 27, App. F; Tr. 1, pp 27-29)

178. The native trees and shrubs specified in the preliminary landscape plan are low growing to prevent project shading. (Tr. 1, pp. 70-74)

179. Screening of the project from Johnson Lane is difficult because the road is at a higher elevation than the project area. The solar panels would be 50 feet from the property line along the Town's Johnson Lane right-of-way. (Applicant 1, Attachment 6, Site Plan LP-1; Tr. 1, pp. 70-74)

180. A state-designed scenic roadway, Route 17, is located approximately 1.5 miles southeast of the site. The project would not be visible from this road. (Applicant 1, Attachment 9, p. 24)

181. The nearest recreational area is Camp Farnam, a youth camp, located approximately 0.25 mile south of the site. The proposed facility is not expected to be visible from this location. (Applicant 1, Attachment 9, p. 24)

Historic and Archaeological Resources

182. No properties listed on the National or State Register of Historic Places are within one mile of the site. One previously recorded archeological site is located 0.5 mile east of the site. The project would have no effect on this resource. (Applicant 1, Attachment 9 – Heritage Report p. 43)

183. Based on a review of historic maps, aerial photographs, examination of files maintained by SHPO and a field review, the site possessed a potential for moderate archaeological sensitivity. Subsequent field evaluations of the site found no evidence of archaeological significance and no further investigation was warranted. By letter dated August 23, 2021, SHPO concurred with the findings of the historic/archeological study and recommended no further action. (Applicant 1, Attachment 9 – Heritage Report; Applicant 5, response 34)

Wildlife

184. The Applicant reviewed the most recent DEEP Natural Diversity Database (NDDB) mapping for the site area (December 2020 and June 2021) which determined that no NDDB areas overlapped the site. No consultation with the DEEP NDDB program is required. (Applicant 1, Attachment 9, pp. 14-15; DEEP-WPED-GP-015- Appendix A)

185. DEEP recommended that the Applicant consult with the NDDB program shortly before the Stormwater Permit is submitted to DEEP to determine if the NDDB files for the site area were updated. (DEEP comments dated October 29, 2021)

186. The northern long-eared bat (NLEB), a federally-listed Threatened Species and state-listed Endangered Species, is known to occur in the vicinity of the proposed site. NLEB is a tree roosting species and due to tree clearing along Johnson Lane, the Applicant conducted a US Fish and Wildlife Service (USFWS) compliance determination to determine if the project would affect NLEB. The USFWS responded on March 23, 2021 indicating the project would not likely result in an adverse effect or incidental take of NLEB and would not require a USFWS permit. (Applicant 1, Attachment 9, pp. 15-16)

187. According to DEEP records, there are no known maternity roost trees in Connecticut. The nearest NLEB hibernacula habitat resource is located in the Town of North Branford, approximately 9 miles southwest of the site. (Applicant 1, Attachment 9, pp. 15-16)

Geology

188. Soils at the site are comprised of thin deposits of glacial till on the southern portion and sand and gravel outwash) deposits on the northern portion. The Applicant does not anticipate encountering bedrock during site development. (Applicant 1, Attachment 9, pp. 21-22)

189. A comprehensive geotechnical analysis has not been performed to date. (Applicant 5, response 48)

Agriculture

190. 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. (Public Act 11-189; GCAD First Annual Report December 2012)

191. 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 Item No. 70 – Climate Change Preparedness Plan)

192. Adaptation strategies for climate change impacts to agriculture include promotion of policies to reduce energy use, conserve water and encourage sustainability. (Council Administrative Notice Item No. 70 – Climate Change Preparedness Plan)

193. Pursuant to CGS §22-26aa, *et seq.*, DOAg administers the Statewide Program for the Preservation of Agricultural Land, a voluntary program 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. The host property is not enrolled within this program. (CGS §22-26aa, et seq.; Applicant 5, response 15)

194. 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 host property is not enrolled in the Public Act 490 Program. (Applicant 5, response 14)

195. Prime Farmland Soils are defined by the United States Department of Agriculture National Resources Conservation Service as the most suitable land for producing food, feed, fiber, forage, and oilseed crops. (Applicant 1, Attachment 9, p. 22)

196. The majority of the host property has remained largely undeveloped and used for agriculture since the 1700s. Approximately 18.3 acres of the property is cultivated agricultural field and 2.9 acres is hayfield. (Applicant 1, Attachment 9, p. 12,)

197. The site would be developed on the 10.6-acre southern field. (Applicant 1, Attachment 9, p. 12)

198. The host property contains 21.4 acres of mapped prime farmland soil, of which 7.7 acres are within the proposed project area. (Applicant 1, Attachment 9, p. 23)

199. The property would maintain an agricultural co-use where the northern field (10.6 acres) would continue to be used for agriculture. (Applicant 1, Attachment 9, p. 12; Tr. 1, pp. 21-22)

200. The Applicant is considering an agricultural co-use of the fenced solar facility by allowing a beekeeper to establish apiaries for on-site honey production. (Tr. 1, pp. 37-40)

201. The Applicant is also considering the planting of low-growing crops within the fenced solar facility. (Applicant 1, pp. 51-52)

Pollinator Habitat

202. Although applicable only to electric transmission line ROWs, 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)

203. The Applicant is considering an agricultural co-use plan that would include the application of a pollinator seed mix to support on-site apiaries. (Tr. 1, pp. 37-40)

Forest and Parks

204. The host property contains 25.7 acres of forest that is characterized as edge forest. No core forest exists on the property due to the agricultural fields and the managed electrical transmission ROW traversing the property. (Applicant 1, Attachment 9, pp. 12-13)

205. Tree clearing would be limited to the wooded strip between the site and Johnson Lane. (Applicant 1, Attachment 9, pp. 12-13)

206. The Cockaponset State Forest is located approximately 0.3 mile south of the proposed solar facility. The project would have no effect on the state forest. (Applicant 1, Attachment 9, p. 24)

Electric and Magnetic Fields

207. Electric fields (EF) and magnetic fields (MF) are two forms of energy that surround an electrical device. Transmission lines, for example, are a source of both EF and MF. (Council Administrative Notice Item No. 43 – Council's Best Management Practices for the Construction of Electric Transmission Lines in Connecticut)

208. EF is produced whenever voltage is applied to electrical conductors and equipment. Electric fields are typically measured in units of kilovolts/meter. As the weight of scientific evidence indicates that exposure to electric fields, beyond levels traditionally established for safety, does not cause adverse health effects, and as safety concerns for electric fields are sufficiently addressed by adherence to the NESC, as amended, health concerns regarding Electric and Magnetic Fields (EMF) focus on MF rather than EF. (Council Administrative Notice Item No. 43)

209. MF is produced by the flow of electric currents. The magnetic field at any point depends on the characteristics of the source, the arrangement of conductors, the amount of current flow through the source, and the distance between the source and the point of measurement. Magnetic fields are typically measured in units of milligauss (mG). (Council Administrative Notice Item No. 43)

210. International health and safety agencies, including the World Health Organization, the International Agency for Research on Cancer (IARC), and the International Commission on Non-Ionizing Radiation Protection (ICNIRP), have studied the scientific evidence regarding possible health effects from MF produced by non-ionizing, low-frequency 60-Hertz alternating currents in transmission lines. Two of these agencies attempted to advise on quantitative guidelines for mG limits protective of health, but were able to do so only by extrapolation from research not directly related to health: by this method, the maximum exposure advised by the International Commission on Electromagnetic Safety (ICES, part of IARC) is 9,040 mG, and the maximum exposure advised by the ICNIRP is 2,000 mG. Otherwise, no quantitative exposure standards based on demonstrated health effects have been set world-wide for 60-Hertz MF, nor are there any such state or federal standards in the U.S. (Council Administrative Notice Item No. 43)

211. Inverters would produce AC magnetic fields at frequencies greater than 60 Hz close to the inverters on site, but this would be localized and not an important contribution to AC magnetic fields offsite. (Council Administrative Notice Item No. 48- FOF#230)

212. The proposed project is designed to interconnect to the existing distribution system rather than a higher voltage transmission system and therefore, the Council's EMF Best Management Practices for the Construction of Electric Transmission Lines in Connecticut and the ICES and ICNIRP MF guidelines would not apply. Based on similar projects, the proposed solar facility would not produce MF above ICES and ICNIRP guidelines. (Applicant 1, p. 6; Council Administrative Notice Item No. 43; Council Administrative Notice Item No. 48- FOF#228 to #232)

Cost

213. The estimated cost of the project is $4 million to $5 million. (Applicant 5, response 3)

Neighborhood Concerns

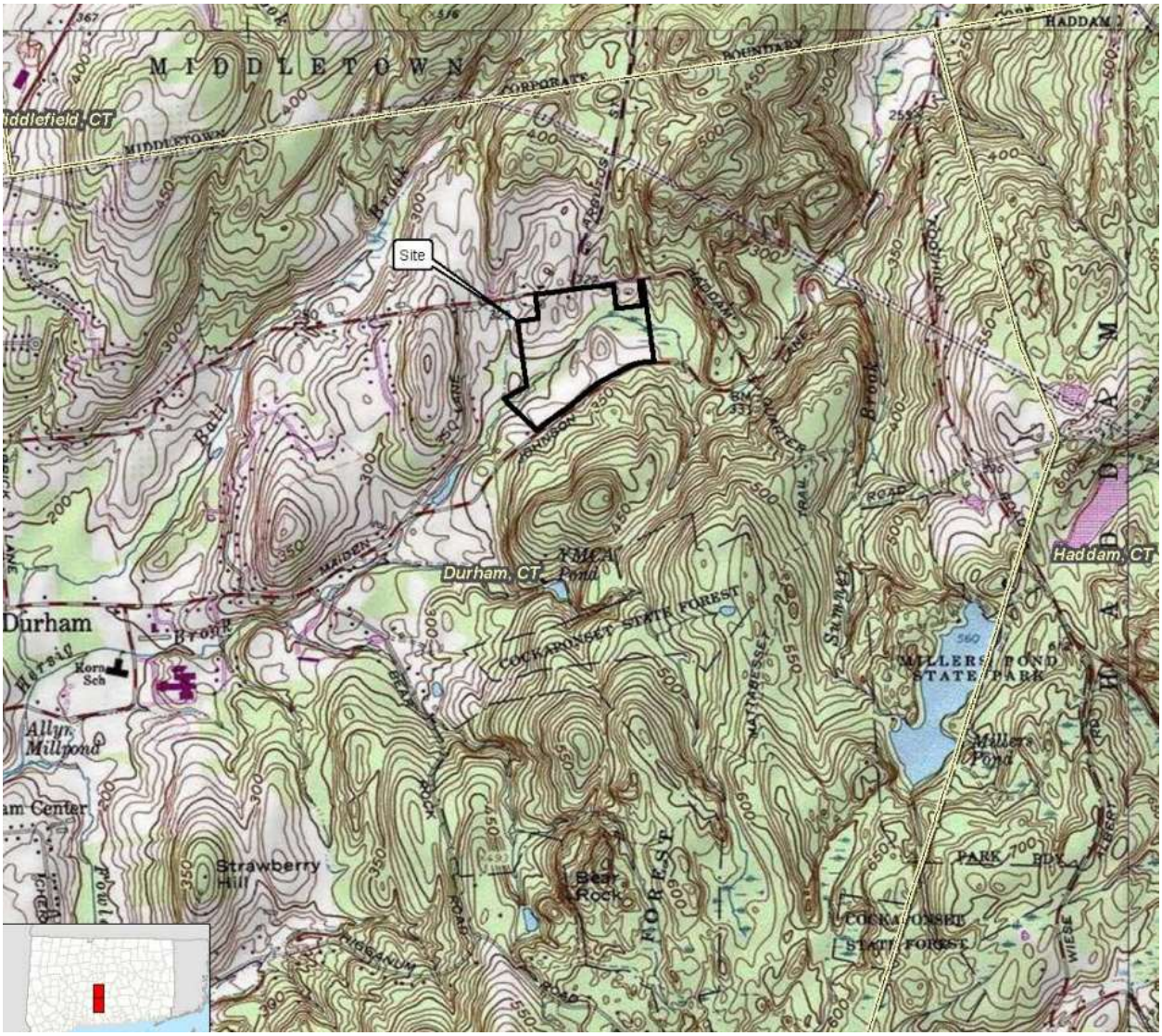
214. Under CGS § 16-50p, the Council is not obligated to take into account the status of property values. (CGS §16-50p; Tr. 4, pp. 6-7; *Westport v. Conn. Siting Council*, 47 Conn. Supp. 382 (2001), *affirmed*, 260 Conn. 266 (2002); *Goldfisher v. Conn. Siting Council*, 2005 Conn. Super. LEXIS 306 (2005), *affirmed*, 95 Conn. App. 193 (2006))

215. Pursuant to CGS § 16-50m, the Council, after giving due notice thereof, held a public comment session via Zoom conferencing on September 28, 2021 at 6:30 p.m. (Council's Hearing Notice dated July 30, 2021; Tr. 2)

216. No members of the public signed up to speak at the public comment session. (Tr. 2, pp. 5-6)

217. The Council received written limited appearance statements from four area neighbors regarding the proposed facility with concerns that included, but were not limited to, buffers/setbacks, tree clearing, agricultural co-use, noise, alternative sites, wildlife and visual screening. (Record)

Figure 1 – Site Location

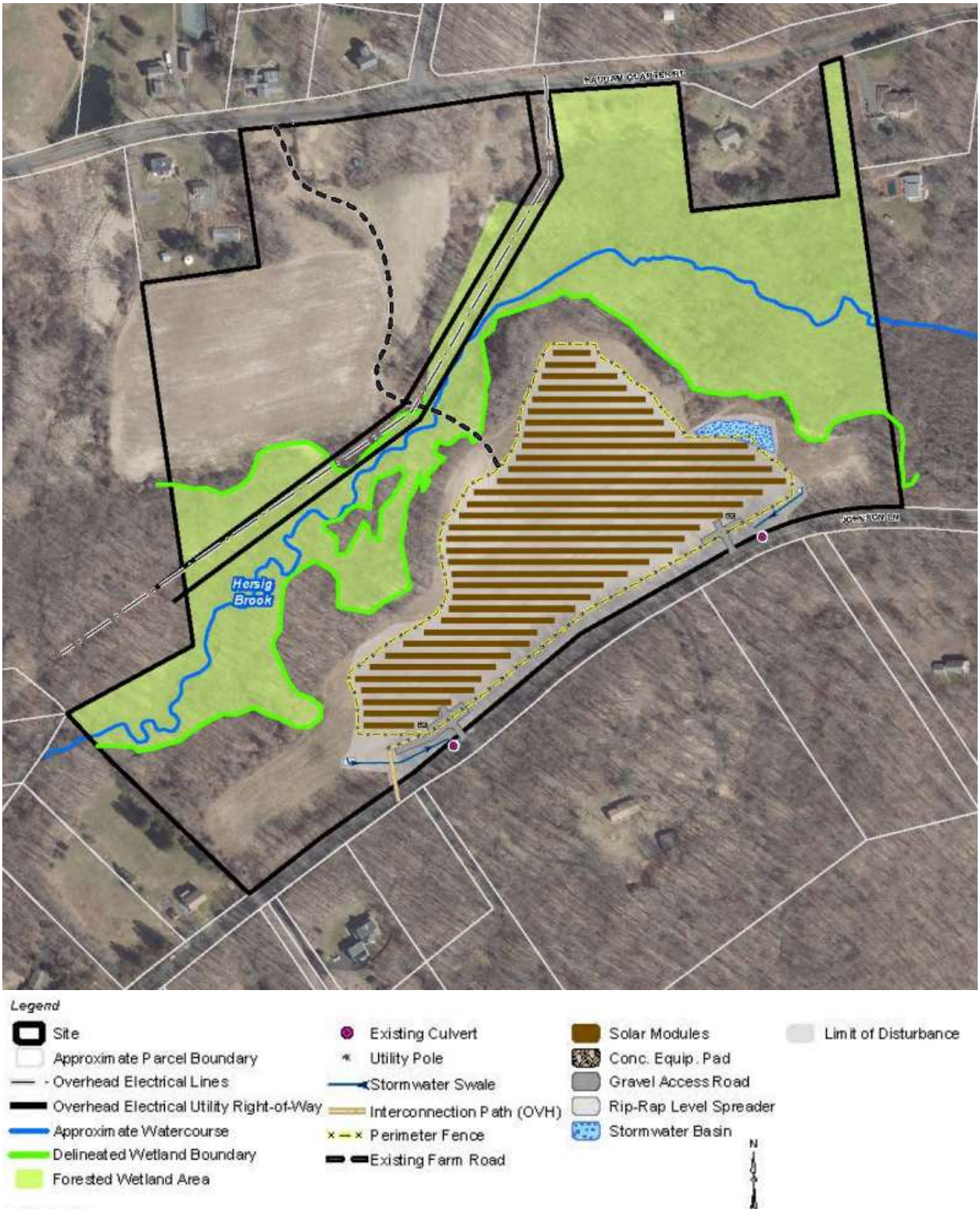


(Applicant 1, Attachment 9)

Figure 2 – Existing Conditions

(Applicant 1, Attachment 9)

Figure 3 – Proposed Site Layout



(Applicant 1, Attachment 9)