PETITION OF

WALLINGFORD RENEWABLE ENERGY LLC

For a declaratory ruling that a Certificate of Environmental Compatibility and Public Need is not required for the construction, operation and maintenance of a 19.99-MW (ac) solar photovoltaic project in Wallingford, Connecticut

January 2018

TETRA TECH

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ACRONYMS/ABBREVIATIONS

Acronyms/Abbreviations	Definition
%	percent
2016 RFP	March 2016 Connecticut Request for Proposal from Private Developers for Clean Energy
AC	alternating current
amsl	above mean sea level
BMPs	Best Management Practices
CARB	California Air Resources Board
CECPN	Certificate of Environmental Compatibility and Public Need
CES	Comprehensive Energy Strategy
CGS	Connecticut General Statutes
CO_2	carbon dioxide
CRRA	Connecticut Resources Recovery Authority
CSC	Connecticut Siting Council
CTDEEP	Connecticut Department of Energy and Environmental Protection
CTDEP	Connecticut Department of Environmental Protection
CTH	Critical Terrestrial Habitat
D&M Plan	Development and Management Plan
dB	decibels
dBA	A-weighted decibels
dbh	diameter at breast height
DC	direct current
FAA	Federal Aviation Administration
GW	gigawatts
I-40	Town of Wallingford's I-40 Industrial District
ISO	International Organization for Standards
ISO-NE	Independent System Operator-New England
kV	kilovolt

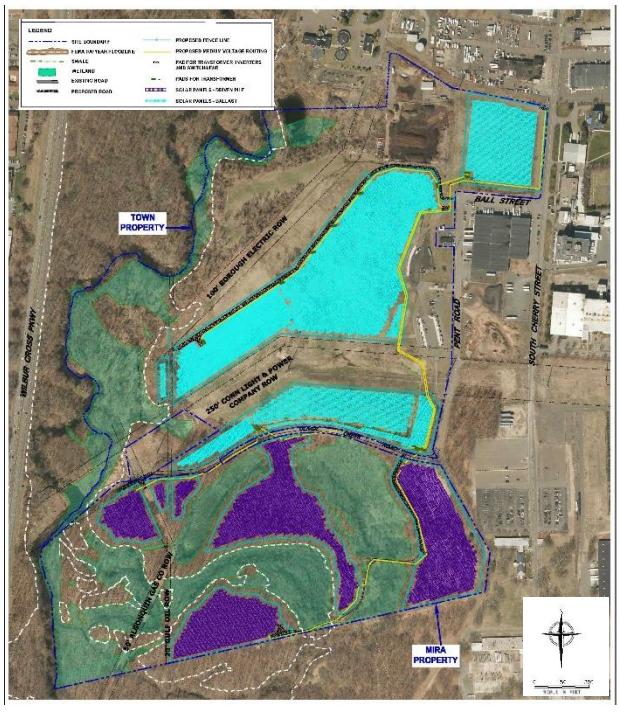
Acronyms/Abbreviations	Definition
Lendlease	Lendlease Corporation Limited
MIRA	Materials Innovation and Recycling Authority
the MIRA Property	the southernmost approximately 52 acres of the Project Site
MSW	municipal solid waste
MW	megawatts
NDDB	Natural Diversity Data Base
NEC	National Electric Code
NESC	National Electric Safety Code
O&M	operations and maintenance
the Petitioner	Wallingford Renewable Energy LLC
the Project	Wallingford Renewable Energy, a 19.99-megawatt solar facility
the Project Area	approximately 49 acres within the Project Site identified as the location for the Project
the Project Site	an approximately 130-acre property located entirely within the Town of Wallingford's industrial district
PPA	Power Purchase Agreement
PV	photovoltaic
PVP	potential vernal pool
RCSA	Regulations of Connecticut State Agencies
RFP	March 2016 Connecticut Request for Proposal from Private Developers for Clean Energy
Route 15	Wilbur Cross Parkway/Connecticut Route 15
Route 150	Connecticut Route 150
Route 5	U.S. Route 5
ROW	right-of-way
RPS	Renewable Portfolio Standard
SESC Guidelines	2002 Connecticut Guidelines for Soil Erosion and Sediment Control
SHPO	State Historic Preservation Office

Acronyms/Abbreviations	Definition
Solar Stormwater Guidance	September 8, 2017 guidance from CTDEEP on Stormwater Management for Solar Farm Construction Projects
SWPCP	Stormwater Pollution Control Plan
Stormwater Manual	2004 Connecticut Stormwater Quality Manual
the Town Property	the northernmost approximately 78 acres of the Project Site
USEPA	United States Environmental Protection Agency
VPE	Vernal Pool Envelope
WRE	Wallingford Renewable Energy LLC

1.0 INTRODUCTION

This is a Petition for a Declaratory Ruling that a Certificate of Environmental Compatibility and Public Need (CECPN) is not needed for the construction, operation, and maintenance of the Wallingford Renewable Energy project (the Project) proposed by Wallingford Renewable Energy LLC (the Petitioner; or WRE) in the Town of Wallingford, Connecticut. The Project includes the development of a 19.99 megawatt (MW) alternating current (AC) ground-mounted solar photovoltaic (PV) system on three contiguous parcels of land in the Town of Wallingford, Connecticut.

The Project was selected by the Connecticut Department of Energy and Environmental Protection (CTDEEP) under its March 2016 Connecticut Request for Proposal from Private Developers for Clean Energy (2016 RFP or RFP). Authorization by the Connecticut Siting Council (CSC) via a declaratory ruling will allow this selected Project to transform rapidly from concept to a vital element of Connecticut's renewable energy infrastructure. The Project presents an opportunity for the redevelopment and reuse of currently underutilized industrial-zoned properties, including a landfill. Pending approvals, the Project will commence financing, detailed engineering, procurement, and construction efforts in 2018, with commercial operation planned for the entire Project in 2019.



The Project, as shown in Figures 1a and 1b, is located within an approximately 130 acre property (the Project Site) located entirely within the Town of Wallingford's Industrial District (I-40). Within the Project Site, approximately 49 acres has been identified as the location for the Project (the Project Area). The Project Site is bounded by the Quinnipiac River and Wilbur Cross Parkway/Connecticut Route 15 (Route 15) to the west; industrial land uses including the Wallingford Energy gas-fired peaking power plant (approved under CSC Petition No. 1183) and a retired steel mill to the north; other industrial uses (chemical manufacturing) extending to U.S. Route 5 (Route 5) to the east; and both former and current active heavy industrial use (chemical manufacturing, coiled rebar extrusion, logistics, and metallurgy) to the south and further south along Toelles Road. The majority of residences in proximity are located over 1,000 feet from the Project Area, with the closest residence (920 feet to the north of the Project Area) separated from the Project Area by other industrial uses. The Town of Wallingford has supported development of the Project in this location (see Appendix A).

The Project Site itself consists of three contiguous parcels. Property owned by the Town of Wallingford (the Town Property), which is the location of the former Wallingford Landfill (which was fully closed in 2005 and has been capped for many years) is to the north, and two parcels owned by the Materials Innovation and Recycling Authority (MIRA) (the MIRA Property) are located to the south. Portions of the MIRA Property were formerly developed with residential uses and have been subject to prior disturbance associated with agricultural and mining uses, although much of the MIRA Property has become partially forested over time. The MIRA Property is currently used for both active and passive control of historic contamination. Other pockets and corridors of development exist within the Project Site, including several electric transmission, oil, and natural gas transmission rights-of-way (ROWs). A letter of support from MIRA is also provided in Appendix A.

The Project's layout maximizes use of open, previously developed areas to the greatest extent possible, and consolidates its features to minimize natural resource impact and carefully consider stormwater management. The characteristics of this type of solar facility re-uses landfill property, minimizes the need for ground disturbance, avoids disruption of subsurface conditions, and allows for continued use of the Project Site as habitat for compatible species. The Project will incorporate the use, where appropriate, of ballast foundations that allow for minimal disturbance of the ground; these will be particularly well-suited to the installations proposed on capped landfill areas. WRE has worked closely with the Project Site landowners (as discussed further in Section 3.3.1) to identify the appropriate locations for the Project Area reflected in this Petition.

Connecticut General Statutes (CGS) §16-50k(a) provides, in relevant part:

> *Notwithstanding the provisions of this chapter or title 16a, the council shall, in the exercise of its jurisdiction over the siting of generating facilities, approve by declaratory ruling . . . the construction or location of any . . . grid-side distributed resources project or facility with a capacity of not more than sixty-five megawatts, as long as: (i) Such project meets air and water quality standards of the Department of Energy and Environmental Protection, (ii) the council does not find a substantial adverse environmental effect, and (iii) for a solar photovoltaic facility with a capacity of two or more megawatts, to be located on prime farmland or forestland, excluding any such facility that was selected by the Department of Energy and Environmental Protection in any solicitation issued prior to July 1, 2017, pursuant to section 16a-3f, 16a-3g or 16a-3j, the Department of Agriculture represents, in writing, to the council that such project will not materially affect the status of such land as prime farmland or the Department of Energy and Environmental Protection represents, in*

writing, to the council that such project will not materially affect the status of such land as core[1] forest."

The Project is consistent with the above requirements. As noted, it was selected by CTDEEP in a solicitation issued prior to July 1, 2017 and pursuant to CGS §16a-3j (specifically, the 2016 RFP) for 19.99 MW (less than 65 MW of generating capacity). The use of industrial property with compromised subsurface conditions avoids the use of prime agricultural land. Although the Project Area includes areas of tree clearing, the Project Site will not impact core forest; in addition, field-verified forested floodplain located along the Quinnipiac River will remain untouched and continue to provide habitat, functions, and values in this compromised industrial setting. Because the Project was selected by CTDEEP in a solicitation issued prior to July 1, 2017, and neither prime agricultural land nor core forest will be impacted, documentation identified in subsection (iii) of CGS §16-50k(a) from the Department of Agriculture and CTDEEP is not required. Finally, as described more fully in this document, the construction, operation, and maintenance of the proposed Project satisfies the criteria of CGS §16-50k(a) and will not have a substantial adverse environmental impact. In fact, the Project aligns with CTDEEP's and the Town of Wallingford's goals for redevelopment and reuse of industrial properties; avoids and offsets the need for air quality impacts; and meets water quality and other standards.

[1] Core forest reflects "pixels" that are relatively far from the forest/non-forest boundary (forested areas surrounded by more forested areas), with small core forest patches defined as less than 250 acres; medium core forest patches defined as between 250 and 500 acres; and large core forest patches greater than 500 acres (http://clear.uconn.edu/projects/landscape/forestfrag/measuring/core_explained.htm).

2.0 PETITIONER

Wallingford Renewable Energy LLC is a Delaware limited liability company, with an address at 909 Lake Carolyn Parkway, Suite 260, Irving, Texas 75039. WRE is wholly owned by Lendlease Americas Holdings, Inc., with U.S. headquarters at 200 Park Avenue, 9th Floor, New York, NY 10166. Lendlease Americas, Inc. is a wholly owned subsidiary of Lendlease Corporation Limited (Lendlease), an Australian company with headquarters at Level 14, Tower Three, International Towers, Sydney Exchange Place, 300 Barangaroo Avenue, Barangaroo NSW 2000.

Lendlease is one of the world's leading fully integrated property and infrastructure solutions providers. Lendlease has a global development pipeline of $44 billion, funds under management of $21 billion, and a global construction backlog of approximately $17 billion.

Lendlease has consolidated revenues of approximately $12.8 billion and approximately 12,400 employees with operations in more than 40 countries throughout Australia, Asia, Europe, and the Americas. Operations in the United States began in the 1970s. Lendlease has a strong capability in delivering large, complex projects, reflected by marquee projects such as the Statue of Liberty Restoration in 1984; the Atlanta Summer Olympic Games in 1996; the revitalization of New York City's Grand Central Terminal in 2006; and the Trump International Hotel and Tower in Chicago in 2009. Lendlease has demonstrated a commitment to the redevelopment and reuse of former industrial properties through current projects in the United States such as its Riverline and Clippership Wharf projects located in Chicago and Boston, respectively. Lendlease is financially strong, with the ability to capitalize and successfully support multiple large scale development and construction projects simultaneously.

Lendlease began an independent focus on developing and constructing renewable energy projects in the United States in 2013. Lendlease's solar experience in the United States includes the construction of approximately 140 MW of projects and a development portfolio of more than two gigawatts (GW) of solar and battery storage projects across the country. Lendlease's development team possesses deep experience developing, financing, and constructing power generation projects totaling more than 13 GW across North America and the Caribbean. The commitment of Lendlease to improving sustainability through the reuse, re-investment, and regeneration of legacy industrial properties is the backdrop for this Project.

WRE has been established as the Project entity. The WRE staff committed to the Project brings substantial expertise on energy project development, construction, and operation. WRE will be structured as an independent electrical generation entity participating in the Independent System Operator-New England (ISO-NE) market, selling power to two regional utilities via Power Purchase Agreements (PPAs). The PPAs were both approved by the Connecticut Public Utilities Regulatory Authority in September of 2017. WRE is not an electric distribution company, nor does WRE provide electricity directly to retail customers.

Correspondence and communications regarding this petition should be addressed to both of the following individuals.

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3.0 PROPOSED PROJECT

The following sections provide details regarding Project Site selection; a description of the Project Site property and ownership; a description of Project features; plans for electrical interconnection; construction schedule and sequencing; operational and maintenance (O&M) information; and a decommissioning plan.

3.1 SITE SELECTION

Lendlease began considering an appropriate site for the Project in early 2016, anticipating the issuance of CTDEEP's RFP for new clean energy projects later in 2016. The RFP sought projects that would help the soliciting parties, including CTDEEP, achieve their respective clean energy goals. Further, CTDEEP encouraged the reuse and redevelopment of existing sites, including landfills and brownfields. Initial outreach was made to landowners regarding their properties by using CTDEEP's website "Siting Clean Energy on Connecticut Brownfields." CTDEEP's RFP was pursuant to Section 1(c) of Public Act 15-107, *An Act Concerning Affordable and Reliable Energy*, as well as CTDEEP's authority under CGS §16a-14.

Lendlease's site selection process focused on the list of municipalities and other government agencies identified by CTDEEP as seeking renewable energy developers for landfill sites (see Appendix B for this notice from CTDEEP). From there, Lendlease identified specific site and community characteristics desired for a preferred Project Site:

- Town support and readiness for the proposed Project;
- Suitable land area available with appropriate characteristics to construct a solar electric generation facility;
- Proximity to existing infrastructure for electrical interconnection;
- Zoning consistent with development of a solar facility;
- No impact to Environmental Justice communities;
- Ability to redevelop and reuse an existing landfill and/or brownfield site;
- Appropriate buffer from residential land uses; and
- The ability to avoid or otherwise minimize environmental impacts.

Both the Town of Wallingford and MIRA demonstrated interest, readiness, and support for the development of a solar energy generating facility on the closed Wallingford Landfill and nearby properties. As discussed further in Section 5.0, information and insights from local officials was an important factor in selection of the Project Site. Land surrounding the Wallingford Landfill is industrially zoned and industrially developed

(Figure 2). Although the Wallingford Landfill itself was unlikely to be sufficient to support the entire solar installation, the additional use of land owned by MIRA created an opportunity to redevelop and reuse additional legacy industrial property for clean energy purposes. In addition to the high voltage electric transmission ROWs that traverse the Wallingford Landfill and surrounding area, electrical interconnection at distribution voltage is available in close proximity to the Project Site, as further discussed in Section 3.4.

Desktop and limited field activities were undertaken to confirm characteristics of the property and to prepare initial layouts indicative of accommodating the desired output, with subsequent, more detailed evaluation of the Project Site occurring following selection of the Project by CTDEEP and entering into a PPA. The Project was selected in November 2016, and WRE entered into PPAs with Eversource and United Illuminating in June of 2017.

More detailed investigations, as documented in this Petition, have been completed as the Project's design has advanced, working with the various opportunities and constraints inherent in the Project Site to develop the proposed Project. By maximizing panel placement on landfill and other disturbed areas, minimizing potential impact to natural resources to the greatest extent possible, and using design opportunities available for solar installation foundations, the Project is successful in its goal to redevelop and reuse legacy industrial properties and capped landfills across three parcels in an area zoned for heavy industry.

3.2 PROJECT SITE DESCRIPTION

The approximately 130-acre Project Site is located in the southwest portion of the Town of Wallingford, New Haven County, Connecticut, approximately 0.4 miles north of the boundary of North Haven, Connecticut, and approximately 0.4 miles north of the boundary of Hamden, Connecticut. The Project Site is located within a corridor of heavy industrial development, generally bounded to the west by the Quinnipiac River and Route 15, and to the east by Route 5 (Figures 1a and 1b). Wallingford, North Haven, and Hamden are the only towns within 2,500 feet of the Project Site.

The Project Site is located within the Town of Wallingford's I-40 district. This zoning district is designated for heavy industrial uses, manufacturing, and distribution, and encompasses the area extending east from Route 15 to Route 5 and south from Connecticut Route 150 (Route 150) to the boundary with North Haven (Figure 2). Wallingford's I-40 zoning district permits a broad range of industrial uses, including blast furnaces, foundries, metal fabrication and processing, pet crematoriums, and motor truck terminals.

Consistent with its zoning, the Project Site's immediate surroundings primarily consist of industrial and commercial development. A map of abutters to the Project Site is provided as Figure 3, and a list of the abutters is provided in Appendix C (with copies of notification letters).

To the north, the Project Site is generally bounded by industrial development, including the Town of Wallingford Water Pollution Control Facility; Wallingford Energy, a 270-MW gas-fired peaking power plant (CSC Petition No. 1183); and a retired steel mill. To the east of the Project Site, industrial and commercial development – including three chemical manufacturing facilities, the Wallingford Resource Recovery Facility and warehouse facilities – occurs up to and further east of an existing active rail line and Route 5. South of the Project Site lies the Allnex chemical manufacturing facility and its industrial property, which extends to Toelles Road. Beyond Toelles Road, additional active heavy industrial use (coiled rebar extrusion, logistics, and metallurgy) is located, including Nucor Steel Connecticut Inc., Ametek Special Metal Products Division Inc., and a FedEx Ground distribution center. The Quinnipiac River flows in a north-south direction generally along the Project Site's western boundary, with the Quinnipiac River State Park extending along its riparian corridor on the west side of the river and extending more expansively south of Toelles Road; Route 15 and associated commercial development lie immediately west of the river. The closest residences are separated from the Project Area by other industrial development and are located 920 feet from the Project Area to the north, along John Street; 1,075 feet to the east, east of Route 5; and 1,445 feet to the west, west of Route 15. There are no residences located to the south of the Project Area.

WRE has worked with Project landowners since early 2016. Site control is through lease option agreements that provide the Project with the ability to enter into a long-term lease agreement for the construction and operation of the Project for a term of 35 years, subsequent to a period of studies, permitting, and design work to determine the locations of improvements. The lease option agreement incorporates flexibility, given the nature of the properties as landfill or brownfield areas, to allow the most appropriate locations within the Project Site to be utilized. The final Project Area will be identified in the Project's Development and Management Plan (D&M Plan) prior to construction, and will ultimately become the Project leasehold.

The Project lease option area (Project Site) is across three contiguous parcels of land described in Table 1.

Table 1. Project Site Lease Option Area

Landowner	Town of Wallingford Parcel Identification	Parcel Size	Project Site	Project Area
Town of Wallingford	162-1	106 acres	78 acres	30 acres
MIRA	161-19; 175-1	52 acres	52 acres	19 acres
Total		***158 acres***	***130 acres***	***49 acres***

Each parcel has been used and/or influenced by industrial and landfill activities; the Project Site has a complex history of use as well as diverse physical features, as further discussed below.

3.2.1 Town Property

Parcel 162-1, owned by the Town of Wallingford, consists of 106 acres; approximately 78 acres of the parcel is incorporated in the Project Site as the Town Property, shown in Figure 4. Elevations on the Town Property range from approximately 30 feet above mean sea level (amsl) to 110 feet amsl. Highest elevations are found on top of the landfill, and lowest elevations are found along the western Project Site boundary. The Town Property consists of the Wallingford Landfill (discussed further below), cleared grassy area, and forested lowland areas to the west, adjacent to the Quinnipiac River. Two electrical ROWs traverse the Town Property. A 250-foot wide Connecticut Light & Power Company ROW extends east-west across the southern portion of the parcel, between portions of the Wallingford Landfill. An approximately 2-acre rectangular parcel owned by Connecticut Light & Power is excluded from the Town Property; this is the location of a natural gas compressor station and is a separate parcel. The second ROW, a 100-foot wide Borough Electric ROW, extends north from the 250-foot ROW in a northeast-southwest direction along the western side of the Wallingford Landfill.

The approximately 82-acre Wallingford Landfill was first operated by the Town of Wallingford in the early 1950s, and the Town continued operating the landfill until September 1988. At that time, the Connecticut Resources Recovery Authority (CRRA) assumed operation under lease from the Town of Wallingford. In 2002, the landfill was capped and closed and received certification of closure from the Connecticut Department of Environmental Protection (CTDEP) (the former name of CTDEEP) in 2005. While in operation, the Wallingford Landfill accepted a mix of solid waste streams, which were segregated and disposed in specific areas; therefore, the landfill includes five components, as outlined below, as well as intervening land.

- Municipal Solid Waste (MSW) Area. The 36-acre MSW area accepted waste from the early 1950s to 1988, when the area stopped receiving waste and was closed by the Town.
- Ash Residue Area. The 7.5-acre ash residue area accepted ash residue from the CRRA Wallingford Waste-to-Energy facility from 1988 until November 1995, and was covered in 1996.
- Former Bulky Waste Area. The 5-acre former bulky waste area accepted bulky waste from December 1975 until 1992, when the disposal area was closed and given a final cover.
- Metal Hydroxide Sludge Cell. The 3-acre metal hydroxide sludge cell accepted waste between November 1980 and January 1984. Final closure of this area was completed by the Town of Wallingford in June 1986. A non-hazardous metal hydroxide sludge cell operated prior to 1980, located adjacent to the 3-acre metal hydroxide sludge cell. Neither of these areas will be used by the Project.
- Emergency Bypass/Non-Processibles Area. The 6-acre emergency bypass/non-processibles area accepted non-processibles and emergency by-pass of solid waste from the CRRA Wallingford

Waste-to-Energy Facility from 1989 until 2000, when the area stopped accepting waste, and was covered in 2002.

Since 2000, there have been no daily activities at the Wallingford Landfill. However, the Town of Wallingford continues to operate a resident drop-off area and bulky waste transfer station at the eastern side of the landfill (accessed by Pent Road), as well as a composting and mulch center on the north side of the landfill, accessible from John Street.

3.2.2 MIRA Property

Parcels 169-19 and 175-1, owned by MIRA, comprise the remaining approximately 52 acres of the Project Site, as shown in Figure 5. Elevations on the MIRA Property range from approximately 80 feet amsl to 30 feet amsl. The highest elevations are found in the eastern portion of the MIRA Property, and the lowest elevations are found to the west. The MIRA Property is accessed by Pent Road and Oliver Creek Road. The portions of these two Town roads that are on or adjacent to the MIRA Property are gated and no longer allow public access.

Parcels 169-19 and 175-1 have a history of development, and were the location of a trailer park and several single-family homes constructed between 1950 and 1954 (as well as agricultural and mining activities during various periods). In 2001, the CRRA (the predecessor name for MIRA) purchased both parcels to gain the right of possession of the southern edge of a leachate plume from the Wallingford Landfill. All structures were demolished in 2001 and 2002, and utilities associated with the trailer park and single-family homes were removed on parcels 169-19 and 175-1; however, several paved and concrete driveways and parking areas were not removed and extend through the MIRA Property. Subsurface evidence of former development may also remain. Debris from the former occupation, including tires and car parts, paint cans, and old furniture, are scattered in several locations throughout the MIRA Property. An Algonquin natural gas pipeline ROW and an oil pipeline ROW also extend through the MIRA Property. A pump house, associated with the abutting property to the south, is located just south of and very close to the MIRA Property line. The primary use of the MIRA Property, however, is to control and monitor the leachate plume, and much of the MIRA Property has experienced significant tree growth over the years since its residential uses were eliminated.

3.3 PROJECT DESCRIPTION

The Project has entered into PPAs with Eversource and United Illuminating as a result of its selection through CTDEEP's 2016 RFP process. The term of both PPAs is for 20 years from the Commercial Operation Date of the Project. In addition to responding to its 20-year PPA commitments, the Project will be available to provide clean energy for Connecticut for many years. The design service life of the Project is 35 to 40 years.

The Project consists of solar PV modules using string inverters; distribution level collector lines; electrical subpanels; step-up transformers; security fencing; and access roads. The Project will be interconnected with the Wallingford Electric Division's distribution voltage of 13.8 kilovolt (kV). Project plans are presented in Appendix D, and the layout is shown in Figure 6. Details regarding the major Project elements are provided in the sections below.

3.3.1 Panel Arrays and Siting Process

The design capacity of the Project is 19.99 MW AC. Figure 6 illustrates the proposed layout within the Project Area, indicating planned locations for driven post panel racking systems versus ballast panel racking systems. The final configuration of the array layouts will be provided in the D&M Plan.

The modules are anticipated to be 390-watt crystalline PV design, with 1,500-volt series strings of up to 54 modules per rack grouped together as 4 or 5 racks per string inverter (as shown in Figure 7). As shown in Figure 6, the solar PV panels will be positioned in areas located throughout the Project Site that have been selected to maximize use of previously disturbed areas and to avoid and minimize potential impacts to natural resources and active areas of concern.

The PV panels will be installed in linear arrays in a generally east-west orientation across the Project Site. The arrays will generally face south and be tilted approximately 10 degrees above horizontal. Each array will consist of panels mounted on fixed vertical post foundations. For those arrays positioned where subsurface constraints do not exist, the post foundations will be driven into the ground to a depth of approximately 10 feet (an example of a driven post foundation solar installation is provided on Figure 8). However, because much of the Project Site surface consists of capped landfill, certain arrays will use a ballast foundation design (an example of a ballast foundation solar installation is provided on Figure 9). A ballast foundation utilizes concrete footings placed on top of the ground surface, with no subsurface penetrations, using gravity and friction to anchor the panels in place, and can be adjusted to accommodate grading differential as appropriate to the specific location. In addition, the wiring that connects the panels will utilize above grade wire management systems, such as conduit or cable trays in areas of the Project that are capped landfill or where historic contamination may exist. As can be seen on Figures 8 and 9, the majority of the area under the panels will remain vegetated; dimensions of the supporting ballasts are anticipated to be approximately 15 square feet at each corner of the panel.

As shown on Figure 6, WRE has prioritized the placement of panels on previously disturbed landfill and other upland property. In establishing panel locations, various constraint areas were eliminated, including easements within which development features cannot be located and federally-regulated areas of hazardous materials (such as the hydroxide sludge area). The remaining capped landfill area was then utilized to the greatest extent possible. Ballast foundations, which allow panel placement without

penetrating the landfill cap, can be utilized even on relatively steep slopes. Where only isolated panels could be placed, such “orphan” panels were eliminated, as the interconnection design requires a critical mass of panels. As can be seen in Figure 6, of the 78 acres within the Project Site on the Town Property, a total of 30 acres has been identified as the Project Area.

Additional panels were required on the MIRA Property to meet a reasonable capacity goal for the Project. On the MIRA Property, floodplain, wetland, and potential vernal pool areas were also identified (as further discussed in Section 6.9) to establish key avoidance areas. Several locations that appeared sufficiently large for panel location were eliminated due to proximity to the Quinnipiac River and its floodplain (this was also the case on the Town Property). Another design goal for the MIRA Property was to locate panels where access from existing roads and/or previously disturbed areas was possible. The locations shown on Figure 6 within the MIRA Property were selected as meeting those criteria; the selected panel locations reflect the approximately 19-acre Project Area within the approximately 52 acres available within the MIRA Property. Panel areas will be interspersed with existing forest, similar to the example solar facility reflected in Figure 10; for the Project, clearing would be less, as clearing has been restricted to within the proposed fence line.

3.3.2 String Inverter Configuration

Four or five racks consisting of up to 27 solar panel modules each will be wired to a three-phase string inverter (see Figure 11). String inverters will be mounted to the racking or at the end of rows within the arrays, and 11 inverter groupings will be connected to one transformer to define a typical inverter/transformer block, as also shown in Figure 11. Inverters and transformers will be mounted for outdoor use with no need for large enclosures to be placed within the arrays. Interconnecting wiring will be above-ground, in cable trays, where landfill or other subsurface constraints warrant, and otherwise will be trenched underground. The inverters will convert the power from direct current (DC) to AC. Solar generated AC power will be aggregated at AC panel boards before being transformed to the distribution voltages at which the Project will interconnect with the existing electrical grid.

3.3.3 Access Road and Laydown Areas

Entrances for the Project will be located at the end of Pent Road (at the southern end of the Project Site); and at the corner of Pent Road and Ball Street (northeast of the Project Site). The surrounding roadway network currently serves numerous industries and is anticipated to readily support construction-related traffic.

Existing access roads on the Project Site will be used and additional gravel access roads will be constructed to provide access, as shown in Figure 6. Where new access roads will be constructed, they will be approximately 16 feet wide (unless wetland constraints dictate they will be narrower). A total of 0.3 miles of

existing road will be used, with an additional 0.3 miles of new road to be constructed for the Project. The new access roads will be constructed with an improved subgrade and approximately six inches of processed gravel placed above existing grades. Minor grading may be required along the proposed access roads depending on topography, and to appropriately manage stormwater flows, mitigating erosion and sedimentation. Security gates will be installed in appropriate locations in order to prevent unauthorized access from public roadways.

Temporary laydown areas, used for temporary placement of materials during the approximately 10-month construction period, will be located within the Project Site boundaries. No additional tree clearing will be conducted for these temporary work spaces. Because construction of the Project will be phased, this will allow areas in which panels have not yet been installed to be temporarily used as construction laydown areas. Information regarding proposed erosion and sediment control measures is presented in the preliminary Stormwater Pollution Control Plan (SWPCP) provided in Appendix E. Once controls are in place, the work area will be used. Work areas not planned for panel installation will be restored following this temporary use, and Best Management Practices (BMPs) will be removed once soils are appropriately stabilized.

3.3.4 Stormwater Management

Stormwater management will be a critical element of the Project during both construction and operation. The Project has been designed to comply with the 2004 Connecticut Stormwater Quality Manual (Stormwater Manual) for both Water Quality and Recharge; the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control (SESC Guidelines); the September 8, 2017 guidance from CTDEEP on Stormwater Management for Solar Farm Construction Projects (Solar Stormwater Guidance); and the existing stormwater permit in effect at the Wallingford Landfill. Each area proposed for panel installation within the Project Area has been individually considered, and appropriate design assumptions have been developed to indicate the planned foundation type. Due to the nature of the Project Site, individual construction areas range in size from 0.33 acres to 17.0 acres. Stormwater management and erosion control plans have been individually addressed for each potential work area based on its size; existing characteristics; proximity to resources requiring special protection; and anticipated Project characteristics. A SWPCP will be developed consistent with the referenced requirements that will minimally affect existing drainage strategies at the capped landfill and within the MIRA Property, and appropriate permit coverage will be sought at least 90 days prior to commencement of construction activities that would involve disturbance of greater than 1 acre of ground surface. A preliminary SWPCP is provided in Appendix E. Additional discussion regarding stormwater management and erosion/sedimentation control is provided in Section 6.12.

3.3.5 Fencing

Equipment areas within the Project Site will be entirely enclosed by a 7-foot tall fence, consistent with National Electric Safety Code, National Electric Code, and CSC requirements. Locked gates will be used for operations and maintenance and/or emergency access. For the fenced arrays on the MIRA Property, WRE is willing to incorporate a 6-inch gap at the bottom of the fencing that will prevent unauthorized access but allow for the movement of smaller wildlife throughout the Project Site. On landfill and other areas with subsurface constraints, fencing will incorporate a ballasted design that will not require driving posts.

3.3.6 Construction Workspace, Clearing, and Restoration

The Project will be located on portions of capped landfill with suitable slopes, on other developed or previously developed land, and on other upland areas. To accommodate the Project layout and prevention of shading (which would reduce energy generation and require larger installations), approximately 20 acres of trees will be cleared (Figure 12). Over 65 percent of the Project Area will not require tree clearing. Within the Project Site, particularly on the MIRA Property, considerable forested area will be unaffected by the Project; additional forest will also remain between the Project Site and Route 15 to the west along the Quinnipiac River riparian corridor. Tree clearing on the Project Site will be restricted to be exclusive of the period of May 1 through August 15 in order to avoid impact to any potential summer-roosting tree bats. Due to the seasonal restriction, felling of trees is anticipated to occur over a consolidated period, with appropriate BMPs in place to avoid erosion and sedimentation. The largest installation area requiring tree clearing will require approximately 5.2 acres to be cleared; this will be largest contiguous area cleared at one time. Stump removal will be phased to limit the area within which ground disturbance is occurring over any one period, working within each installation area to limit work to no more than 5 acres at any one time for appropriate stormwater management.

Work on the capped landfill area will utilize specific construction measures. No changes to the existing engineered caps/cover system, the stormwater flow regimes, or topography are proposed; work will be consistent with the existing Stormwater Industrial General Permit in effect at the landfill. A priority will be minimizing the time construction vehicles are required to travel on the capped landfill in order to minimize the potential for compaction and rutting, and to minimize disturbance of the existing vegetative cover to the greatest extent possible (although trees will be removed from the capped landfill areas). To accomplish this, equipment will be off-loaded from tractor-trailers onto low ground-pressure vehicles for transport from the access roads onto the landfill cap in order to maintain the integrity of the cap. The ballast systems will be placed directly on the existing grass surface. Construction equipment for installation on landfill caps will include light duty cranes or similar equipment to lift ballasts, racking systems, and panels into place. On days with significant rain activity that could result in excessive rutting, work on the landfill caps will be suspended. Once panel placement is completed, any areas of lost material will be replaced and reseeded.

No landscaping plans or tree plantings are proposed for the Project, given the industrial nature of the Project Site and its vicinity. However, seeding enhancements, such as use of pollinator species (as further discussed in Section 6.10.5), will be applied to the ground surface following panel installation to allow for continued use of the Project Site for habitat purposes. Within the area of stripped barren habitat (discussed in Section 6.10.2), measures appropriate to retaining more open characteristics will be employed.

3.4 ELECTRICAL INTERCONNECTION

WRE has submitted an Interconnection Request to Wallingford Electric Division allowing for interconnection of Project to the existing distribution system. The interconnection facility design will be conducted in accordance with the requirements of the interconnecting utility in coordination with ISO-NE. As part of the interconnection process, WRE has successfully completed a utility-sponsored Scoping Meeting, Application Request, and has received the first feasibility study report for the Project.

The Project will use both AC and DC electric lines, all of which will be accommodated within the Project Site. As noted previously, where subsurface conditions pose constraints, the collection system will remain aboveground; buried interconnections will be used where safety constraints do not exist.

Based upon the most recent discussions and feasibility study conducted by Wallingford Electric Division, the Project anticipates providing interconnection via three locations in close proximity to the Project Site. The first point of interconnection will be a dedicated feeder that will be hung on existing wooden poles beginning at Ball Street and leading approximately 0.33 mile to the off-site Wallingford Substation (Figure 13). This point of interconnection will potentially involve the replacement of up to 10 existing wooden poles and the addition of up to 6 new utility poles in an existing industrial corridor outside of the Project Site. The second point of interconnection will be a tap on an existing distribution line that runs on the same poles on which the dedicated feeder will be located. The third point of interconnection will be at the northeastern corner of the Project Site. This point of interconnection will involve a boring underneath and across Cherry Street and a tap on the distribution line that is across the street from the Project. All of the interconnections combined will require up to 12 new wooden distribution poles on the Project Site. The on-site electrical lines and interconnection to the Wallingford Substation will not be used for the purpose of delivering power directly to end users.

3.5 CONSTRUCTION SCHEDULE AND SEQUENCING

Project construction is anticipated to begin in late 2018. Initial work will involve tree clearing and associated erosion control measures. Installation of additional erosion control and species protection measures will follow. Formal construction notice to proceed is anticipated in late 2018, with delivery of equipment likely commencing in early 2019. As each discrete area of installation is completed, the ground surface will be

stabilized, although BMPs will remain in place until final stabilization occurs. Land preparation and site work is anticipated to continue through the end of summer 2019, with the final installation of array equipment in fall of 2019. Final site stabilization, testing, and commissioning are expected to be completed in the fall of 2019. Construction activities are expected to occur Monday through Saturday between the hours of 7:00 a.m. and 9:00 p.m. A construction schedule timeline is provided as Figure 14.

Prior to construction, a health and safety plan will be finalized that will address not only the specific characteristics of the Project Site and the Project, but will reflect the industrial nature of the surrounding land uses. As previously noted, an SWPCP will also be developed and implemented that will include regular inspection of erosion control measures to prevent sedimentation or water quality impact (see Appendix E). Close coordination will occur with property owners in order to minimize impact to the capped landfill areas and other potential legacy issues existing at the Project Site.

3.6 OPERATION AND MAINTENANCE

Once constructed, operation of the Project is automated and requires no on-site personnel. Connecticut-based contractors will be involved in O&M activities for the Project. The Project will be continually monitored via the internet to confirm proper operation and performance. Energy metering will also be accomplished by remote telemetry. Once the Project is in operation, site maintenance activities will occur to ensure safety and prevent shading impacts to the Project. Measures will be undertaken in accordance with existing requirements for maintenance and preservation of the landfill cap, including ensuring that no woody vegetation is growing on the landfill cap, maintaining herbaceous vegetation on the landfill, avoiding impact to landfill vents and monitoring wells, and ensuring access for ongoing landfill monitoring efforts. The Project Area will be walked on a regular basis for evaluation of other potential issues related to safety, security, or environmental protection. Certain measures may be incorporated into the final landscaping of the Project to reflect habitat enhancement, such as the use of pollinator species in seeding, maintaining sand-species habitat characteristics within the stripped barren area, and timing of mowing to protect turtles and facilitate use of grassed areas by ground nesting birds (as further discussed in Section 6.10.5). As with other similar projects in New England, seasonal rains are expected to be sufficient for panel cleaning. In the event that panel cleaning is required, it can be accomplished by using a truck with a water tank. A draft O&M Plan for the Project is provided in Appendix F.

3.7 DECOMMISSIONING

The Project is proposed with a 35- to 40-year design life. At the end of the Project's design life, all equipment, including racking systems, panels, inverters, ballast foundations, and electrical collection systems, will be removed in accordance with the Project's Decommissioning and Restoration Plan

(Appendix G). The Project currently has commitments in its agreements with all of the landowners to remove the equipment at the end of the Project's useful life and decommission the Project. In all of the agreements, the Project has an obligation to decommission all above-grade facilities and foundations and restore the surface to a condition similar to that as it existed at the inception of the Project, as well as repair any damage to the leased area as a result of removing the improvements. Although it is anticipated that the salvage value of the equipment would fully offset the cost of decommissioning and restoration, each agreement includes a provision that, on or before the tenth year of operation, the Project will be required to post and maintain security (performance bond or letter of credit) for the remainder of the Project life that is sufficient to pay for decommissioning and restoration.

4.0 PROJECT BENEFITS

The Project will provide the state's electrical system with additional generating capacity that will meet demand using renewable energy, contribute to grid stability, and foster the redevelopment and reuse of underutilized industrial property. The Project is consistent with Connecticut's 2013 Comprehensive Energy Strategy (CES), which set forth clear goals for increasing the use of renewable energy as a part of the state's power generation portfolio:

> *The Global Warming Solutions Act (Connecticut Public Act 08-98) sets a goal of reducing greenhouse gas emissions by 80% by 2050. Connecticut's Renewable Portfolio Standard (RPS) requires that 20% of generation serving state customers be from renewables by 2020. Meeting the 2020 RPS goal will require the development of 6,196 gigawatt-hours, or nearly 3 gigawatts of low-carbon supply – more than 25 times the amount of power generated by Class I resources (i.e., solar power, wind power, and fuel cells) within Connecticut in 2011.*[2]

As part of the Clean Energy RFP, WRE was required to demonstrate the Project's consistency with the policy goals outlined in the CES, including, but not limited to: promotion of wind, solar and other renewables and low carbon energy technologies.[3] The Project will provide clean, renewable solar-powered electricity that will support achieving the state's legislatively mandated obligations under the RPS, as well as its other energy policies, including the goal to "develop and utilize renewable energy resources, such as solar and wind energy, to the maximum practical extent."[4] Selection of this Project for a PPA under the Clean Energy RFP process affirms its consistency with the state's energy plans and objectives. In addition to the direct contribution the Project will make to increase the use of renewable energy, additional reduction of greenhouse gases and criteria air emissions will be associated with the displacement of older, less efficient fossil fuel generation. The Project will generate approximately 24,000,000 kilowatt-hours per year of clean, emissions-free electricity.

As reflected in the Carbon Debt Analysis presented in Appendix H, the Project provides an important contribution in the shift toward carbon-reduction strategies. Use of the Project Site, incorporating the repurposing of capped landfill areas and other land that has been effected by leachate plumes and other prior disturbance, is not only in alignment with state and local objectives, but minimizes the need for tree clearing and avoids the disruption of agricultural soil areas. Reuse of industrial land is a key benefit resulting from this Project.

[2] CES, at 76 (footnotes omitted).
[3] Clean Energy RFP, at 31.
[4] CGS §16a-35k.

The Project anticipates using local and regional labor, as practical, for construction, and will be a source of both direct and indirect revenue contribution to the local community. Approximately 100 jobs will be created during construction. Further, WRE will subcontract with local and regional firms for the operations and maintenance of the Project. In addition, the local community will benefit from a negotiated tax agreement that will provide additional revenue for the life of the Project. By bringing an appropriate development to the Project Site, the Project increases the economic and energy value of Wallingford's industrial district, while preserving other industrially zoned locations for additional economic growth.

5.0 STATE AND LOCAL INPUT AND OUTREACH

Throughout the process, WRE has kept the Town of Wallingford, MIRA, and state regulators apprised of the Project's progress, and engaged on providing feedback on Project design and permitting approach. Later, during the course of Project development, WRE expanded the scope of its outreach to include the Towns of North Haven and Hamden, to obtain those municipalities' feedback on the Project. WRE is committed to continuing to solicit input from Town officials, other relevant agencies, and from the general public in an effort to develop a Project that results in the most public benefit with the least impact. The Petitioner will continue to work with Town officials and the local community by pursuing a multi-faceted and inclusive public outreach effort. Appendix A of the Petition presents letters of support from both the Town of Wallingford and MIRA for the Project.

WRE and its representatives have met with the Town of Wallingford since 2016 with respect to the Project. In total, there have been four publicly noticed meetings regarding the Project in Wallingford, including three Wallingford Town Council Meetings and the Project Open House Event (held at the Wallingford Town Hall). Notice of the Open House Event was published in the Record-Journal on November 12, 13, and 14, 2017. Further, over the months of September and October 2017, WRE personally contacted Project neighbors to provide an opportunity to inquire and learn about the Project. While not all neighbors were reachable, WRE representatives spoke with most Project neighbors and followed up with several to provide additional information about the Project. In November of 2017, WRE representatives reached out to municipal representatives in Hamden and North Haven to inform them of WRE's proposed development of the Project. Further details on outreach efforts can be found in Appendix I.

As required by Regulations of Connecticut State Agencies (RCSA) §16-50j-40(a), WRE provided notice of its intent to file this Petition to: (a) those adjacent property owners listed in Appendix C; and (b) the municipal officials and government agencies listed in Appendix J. In addition, WRE provided a copy of the Petition to the Towns of Wallingford, Hamden, and North Haven, and to MIRA.

6.0 POTENTIAL ENVIRONMENTAL EFFECTS

6.1 SITE AND COMMUNITY SETTING

6.1.1 Existing Project Site Land Use

Existing land use at the Project Site is industrial and undeveloped land intended to support industrial uses. The Project Site is the location of a municipal capped landfill and land used for active and passive control of groundwater plumes associated with the capped landfill. Additional detail on Project Site land uses was provided in Section 3.2. Substantial buffering exists between the Project Area and residential neighbors, as further discussed below.

6.1.2 Existing Surrounding Land Use

The Project Site is located in an area of the Town of Wallingford characterized primarily by industrial and commercial uses. Land uses surrounding the Project Site are shown on Figure 15.

Prior to the 1940s, the area surrounding the Project Site consisted of agricultural land, forested land, and shrub land, with small buildings located to the southeast, between the Project Site boundary and Route 5. Review of historic aerial imagery indicates industrial development surrounding the Project Site first appeared in the 1940s. By the late 1940s, multiple large industrial buildings were constructed at the end of South Cherry Street, where the Allnex manufacturing facility is currently located, south of the Project Site. Development in this area expanded in the 1960s, and development both north and south of the Project Site expanded through the 1980s and 1990s.

Today, significant industrial and commercial development exists to the north along John Street and South Cherry Street; to the east, along Pent Road, South Cherry Street and Route 5; and to the south along Toelles Road. The Quinnipiac River, Quinnipiac River State Park, and Route 15 are located to the immediate west of the Project Site.

Industries proximate to the Project Site include:

- Wallingford Energy, an approximately 270-MW natural gas-fired peaking energy generating facility consisting of five turbines located at 115 John Street, approximately 0.16 miles (865 feet) north of the Project Site (CSC Petition No. 1183);
- A retired metals manufacturing facility operated by Allegheny Technologies Corp and closed in 2013 located at 80 Valley Street, approximately 0.28 miles (1,460 feet) north of the Project Site;

- The Town of Wallingford Water Pollution Control Facility, located along John Street, approximately 0.05 miles (265 feet) north of the Project Site;
- The Wallingford Department of Public Utilities Electric Division offices located at 100 John Street, approximately 0.12 miles (645 feet) north of the Project Site;
- The Wallingford Water and Sewer Division offices located at 377 South Cherry Street, approximately 0.12 miles (660 feet) north of the Project Site;
- E-J Electric, a freight shipping and trucking company, located at 419 South Cherry Street, approximately 0.01 miles (55 feet) north of the Project Site;
- Hi-Tech Fabricating, Inc., a structural steel erection company, located at 420 South Cherry Street, approximately 0.03 miles (160 feet) northeast of the Project Site;
- BYK USA, a paint and plastics additives research, development, and production company, located at 524 South Cherry Street, approximately 0.03 miles (135 feet) east of the Project Site;
- The Wallingford Resource Recovery Facility, which converts municipal solid waste to energy and holds an active permit to combust waste (but no combustion activities currently occur on the site) located at 530 South Cherry Street, approximately 0.1 miles (545 feet) east of the Project Site;
- Universal Distributors, a distribution services company, located at 1 Ball Street, approximately 0.02 miles (110 feet) east of the Project Site;
- The Wallingford Animal Shelter, located at 5 Pent Road, directly adjacent east of the Project Site;
- The Allnex USA Inc. manufacturing facilities, located at 528 South Cherry Street, directly adjacent south and east of the Project Site;
- Aramsco, an asbestos removal supplies and equipment company, located at 2 Toelles Road, approximately 0.43 miles (2,210 feet) southeast of the Project Site;
- Ametek Special Metal Products Division Inc., a metal products production company, located at 21 Toelles Road, approximately 0.57 miles (3,000 feet) south of the Project Site;
- FedEx Ground distribution center, located at 29 Toelles Road, approximately 0.61 miles (3,195 feet) south of the Project Site; and
- Nucor Steel Connecticut Inc., a steel producer and recycling facility, located at 35 Toelles Road, approximately 0.51 miles (2,685 feet) south of the Project Site.

Outside the area immediately surrounding the Project Site, commercial land uses exist along Route 5. The closest residences are separated from the Project Area by other industry, and are located 920 feet to the north, along John Street. More distant residential uses extend to the north, east, and west, also separated from the Project Area by industrial development and/or transportation infrastructure.

The Project Site lies entirely within the Town of Wallingford; however, portions of three municipalities are encompassed within 2,500 feet of the Project Site. The Town of North Haven lies south of Allen Brook, which is directly south of the industrial development along Toelles Road. The Town of Hamden lies west of Route 15, southwest of the Project Site. As previously described, land use transitions to primarily residential uses north, east, and west of the Project Site within Wallingford. Rural residential uses also exist southwest of Project Site within Hamden. Industrial and commercial development extends south of the Project Site in North Hamden within the corridor between Route 5 and Route 15.

6.1.3 Proposed Land Use Impact

Development of the Project on the Project Site will be consistent with the existing industrial use and purpose of the property and will transform an underutilized industrially zoned landfill property to a productive solar energy facility that will deliver renewable energy to the regional grid.

Project impact on the land and natural resources on the Project Site will be minimal. Solar panels constructed atop the landfill and other areas that have been impacted by former development uses will be constructed using a ballast foundation design, with minimal land intrusion, to retain the integrity of the landfill caps and avoid unnecessary subsurface work. The proposed Project layout will avoid existing ROWs, landfill gas vents, on-site groundwater monitoring wells, and the access for the pumphouse located just south of the MIRA Property boundary, to ensure that the Project will not obstruct post-closure activities and groundwater control on the Project Site.

No hazardous materials or substances will be used or stored on the Project Site during construction or operation of the Project. In landfill areas or locations where other legacy issues could exist, the use of ballast foundation design will avoid impact by limiting soil intrusion.

Development of the Project at the selected Project Site is consistent with the Wallingford Plan of Conservation and Development 2016 – 2026. A copy of the Wallingford Plan of Conservation and Development can be found at: http://www.town.wallingford.ct.us/images/customer-files/PZPOCDFinAdoptedPlan61316.pdf. The Wallingford Plan of Conservation and Development recognizes the need for the Town to adjust its economic development strategy to keep pace with changing needs in the business community to retain and grow its economic base. To achieve this vision, the Town of Wallingford has a goal of attracting new businesses to key industrial areas. The Project will be the first utility-scale solar facility in the Town of Wallingford. The Project will be constructed on existing industrially

developed and affected land that would not be available for other types of industrial or commercial development, thereby increasing the development yield for these industrial properties and allowing other properties to be available for additional economic development.

6.2 PUBLIC HEALTH AND SAFETY

The Project will meet or exceed applicable industry, state, and local codes and standards. All applicable health and safety requirements relevant to solar energy generating facilities will be followed during construction and operation, and the Project will not pose any safety concerns or hazards to the general public. The Project will not consume any raw materials, will not produce any by-products, and will be unstaffed during normal operating conditions.

During Project construction, construction contractors and employees will receive general and Project-specific health and safety training. Training will include review of state and local health and safety requirements; location and routes to nearby emergency care facilities; analyses of risks and procedures to mitigate any exposures; stop work triggers; and communication protocols for reporting health and safety issues. All construction workers will comply with required health and safety controls and will understand and observe the health and safety plan developed for the Project Site. Any and all unsafe conditions will be reported to the construction manager.

The Project is anticipated to have limited impact on traffic flow; however, WRE will coordinate with local authorities to minimize potential impacts of Project-related construction on existing traffic patterns and roadways. The location of the Project Site immediately proximate to major highways, including direct access from Interstate 91, will minimize effect on local roadways. Any potential construction-related traffic will be temporary and restricted to the Project's approximately 10-month construction period. Once operational, the Project will be generally unstaffed and only occasional vehicle trips to the Project Area will occur for routine maintenance activities. No raw or hazardous materials or fuels will be delivered to or stored at the Project Area. The Project will be secured by a 7-foot high fence.

The Project will be screened from much of the surrounding area due to existing development, topography, and intervening vegetation. The solar modules are designed to absorb incoming solar radiation and minimize light reflected off the panels, with only a small percentage of incidental light reflected off the surface of the panels. The panels will be tilted toward the southern sky at an approximate angle of 10 degrees. The incidental light reflected off the panels will be significantly less than light reflected off of common building materials or the surface of undisturbed water; therefore, reflected light is not anticipated to impact public health and safety.

Before Project operation commences, WRE will meet with local first responders to supply information on responding to emergencies at solar facilities. A tour of the Project will be provided and the clearly marked disconnect switches will be identified for use during an emergency. The system will be remotely monitored through a data acquisition system, allowing for remote shutdown of the Project in the event of a fault or other power outage event. Emergency vehicles and service equipment will be provided adequate access to the Project Area via the Project's access roads.

6.3 NOISE

The Project will be an extremely low source of noise located within an industrially zoned setting. The Project is surrounded by industrial uses and roadways that contribute to ambient levels of noise in the vicinity anticipated to be considerably greater than those to be generated by the Project. The following sections present information about applicable noise standards and anticipated impacts.

6.3.1 Noise Level Requirements and Guidelines

Connecticut regulations for the Control of Noise established by CTDEEP at Section 22a-69 and Chapter 144 of the Town of Wallingford Code of Ordinances contain guidance pertaining to noise that apply to the Project; the local ordinance is generally consistent with CTDEEP noise regulations. The CTDEEP noise limits, which are prescribed according to land use, are shown in Table 2.

The regulations also prescribe provisions for impulse noise, not allowing impulse noise in excess of 80 decibels (dB) (peak) during nighttime hours in any Class A zone and not allowing impulse noise in excess 100 dB (peak) at any time to any zone. Audible discrete tones also require special consideration. A limit of 100 dB pertains to infrasonic and ultrasonic noise. Construction noise is exempt from the CTDEEP noise regulations.

Table 2. CTDEEP Noise Limits

Emitter	Receptor (dBA[a])			
	Class C	Class B	Class A Daytime (7:00 am – 10:00 pm)	Class A Nighttime (10:00 pm – 7:00 am)
Class C – Industrial	70	66	61	51
Class B – Commercial and Retail Trade	62	62	55	45
Class A – Residential Areas and Other Sensitive Areas	62	55	55	45

[a] A-weighted decibels.

The Town of Wallingford provides noise level standards applicable to the Project under Chapter 144 of the Code of Ordinances. The Town noise-level standards are consistent with those prescribed by the CTDEEP, although the definitions of daytime and nighttime are different. The Town of Wallingford considers daytime to be 7:00 am to 8:00 pm and nighttime to be 8:00 pm to 7:00 am.

As noted in Table 2, the Project is required to meet sound levels of 70 dBA at the nearest industrial property, 66 dBA at the nearest commercial property, levels of 61 dBA at the nearest residential property during the day (when electricity would be generated by the Project), and 51 dBA at the nearest residential property at night (when certain ancillary equipment may still be operating). The closest commercial property boundary is approximately 55 feet from the Project Area, while the nearest residential property is approximately 920 feet.

6.3.2 Acoustic Modeling Methodology and Inputs

Acoustic modeling was conducted using the DataKustic GmbH CadnaA computer-aided noise abatement program, which conforms to algorithms contained within the International Organization for Standardization (ISO) standard 9613-2, “Attenuation of Sound during Propagation Outdoors.” The engineering methods specified in this standard consist of full (1/1) octave band algorithms that incorporate geometric spreading due to wave divergence, reflection from surfaces, atmospheric absorption, screening by topography and obstacles, ground effects, source directivity, heights of both sources and receptors, seasonal foliage effects, and meteorological conditions. The CadnaA acoustic modeling analysis incorporated a conservative ground absorption factor applied for the Project Site and surrounding area, which was G=0. It should also be noted that this analysis did not incorporate intervening structures.

Reference sound power levels input to Cadna-A® were provided by representative equipment manufacturers. The source levels used in the predictive modeling are based on estimated sound power levels that are generally deemed to be conservative. The sound power level is defined as ten times the logarithm (to the base 10) of the ratio of a given sound power to the reference sound power of 1 picowatt. Sound power is defined as the rate per unit time at which sound energy is radiated from a source and is expressed in terms of watts. Table 3 summarizes the equipment sound power level data used as inputs to the modeling analysis. Note that the model included 21 pads with a single transformer, and two racks of six inverters (12 inverters total per pad).

Table 3. Modeled Octave Band Sound Power Levels for Project Equipment

Equipment Description	Octave Band Sound Power Level (dB)									Broadband
	31.5	63	125	250	500	1000	2000	4000	8000	dBA
Transformer	76	85	90	89	89	w83	78	73	66	89[1]
Inverter	14	34	51	59	64	64	60	53	44	69[2]

[1]Broadband sound power level and octave bands calculated based on the manufacturer's National Electrical Manufacturers Association rating of 64 dB.
[2]Broadband sound power level and octave bands calculated based on a sound pressure level 58 dBA at 1 meter provided by the manufacturer. Octave band levels were based on data from similar equipment.

6.3.3 Noise Prediction Model Results

Broadband (dBA) sound pressure levels were calculated at an elevation of 1.5 meters (5 feet) above the ground, the height of the ears of a standing person, for expected normal Project operation assuming that all components identified previously are operating continuously and concurrently at the representative manufacturer-rated sound levels. The sound energy was then summed to determine the equivalent A-weighted sound pressure level at a point of reception during normal operation. Sound contour plots displaying broadband (dBA) sound levels presented as color-coded noise isopleths in 5-dBA intervals are provided in Figure 16. The noise contours are graphical representations of the cumulative noise associated during normal operation of the individual equipment components and show how operational noise would be distributed over the surrounding area. The contour lines shown are analogous to elevation contours on a topographic map, i.e., the noise contours are continuous lines of equal noise level around some source, or sources, of noise. In addition, Figure 16 shows an isopleth that corresponds to the CTDEEP and Town of Wallingford noise limit required for a Class C industrial land use (such as the Project) for both Class C industrial land use and Class A residential land use receivers during the most stringent nighttime period (51 dBA).

Table 4 shows the projected exterior sound levels resulting at sensitive receptor locations and at Project boundary lines. At the selected residential receptors the noise levels range from 30 dBA to 37 dBA, which reflect compliance with the nighttime 51 dBA standard, and sound levels that are unlikely to be perceptible, given the existing setting. Noise levels at locations along the Project boundary line range from 45 dBA to 62 dBA, which comply with the 70 dBA industrial noise limit. Therefore, noise modeling results demonstrate that the Project will operate in compliance well within the applicable noise requirements.

Table 4. Acoustic Modeling Results Summary

Receptor Number	Location Description	Threshold Limit, dBA	Project Sound Level, dBA
1	Northern Residential Community	51	34
2	Eastern Residential Community	51	30
3	Southwestern Residential Community	51	36
4	Western Residential Community	51	37
5	North Project Boundary Line	70	46
6	Eastern Project Boundary Line	70	60
7	Southern Project Boundary Line	70	62
8	Western Project Boundary Line	70	45

6.4 AIR QUALITY

The Project is a solar energy generating facility, and, therefore, will generate no air emissions during operation and will not require an air permit. A Carbon Debt Analysis (Appendix H) was conducted for the Project to determine the net improvement in carbon debt resulting from the Project. The Project will result in elimination of 17,861 metric tons of carbon dioxide (CO_2) equivalent emissions based on the generation of 24,000 MW-hours of electricity during the first year of operation. This reduction is equivalent to removing 3,825 vehicles off the road.

During construction, potential air emissions will include those from construction vehicles and construction activities. These air emissions will be temporary and will be controlled by appropriated mitigation measures, including but not limited to: water for use of dust control; limits on idling of construction equipment in accordance with applicable state regulations; and proper maintenance of equipment and vehicles. As a result, any potential air quality effects associated with Project construction activities will be *de minimis*, and will not exceed thresholds requiring an air permit.

The Project will use off-road construction equipment that meets the latest United States Environmental Protection Agency (USEPA) or California Air Resources Board (CARB) standards for diesel emissions, and will consider use of best available controls in an effort to reduce exhaust emissions. On-road vehicles (e.g., dump trucks, fuel delivery trucks) will also be used that meet the latest USEPA and/or CARB standards for construction projects or that can otherwise be retrofitted to reduce these temporary emissions.

Idling of mobile sources used during construction will be limited to 3 minutes, per RCSA §22a-174-18(b)(3)(C). Signs will be posted, and language will be incorporated in contract specifications for construction to provide for notice and enforcement of this limit in order to further reduce on-road and construction equipment emissions.

6.5 SCENIC VALUES

The proposed Project will have minimal visibility, and will not reflect a significant change in the character of views currently experienced. The area surrounding the Project is characterized by its industrial setting and is well-buffered by as many as 16 industrial and commercial businesses located within 0.6 miles. The industrial setting includes large warehouses; industrial landfills; industrial buildings with stacks, vents, and other associated structures; chain-link fenced gravel and paved parking areas; storage yards containing shipping containers and soil piles; high voltage transmission towers; and frequent truck traffic.

Intervening industrial structures, vegetation, and topography will obstruct views of the Project from most of the surrounding areas. Along John Street, located 0.17 miles north of the Project Site, multiple warehouse buildings block views of the Project Area from the roadway (Figure 17; Figure 18). Along Dudley Avenue, located 0.13 miles east of the Project Site, warehouse buildings situated close to the roadway and intervening trees and vegetation prevent views of the Project Site. Also along Route 5, located approximately 0.2 miles east of the Project Site, warehouse buildings located along South Cherry Street and Dudley Avenue and a row of trees along some sections of Route 5 obstruct views of the Project Site. Buildings and vegetation located along areas of the active rail line that runs parallel and to the west of Route 5 also block views of the Project Site (Figure 17; Figure 19). Any potential views of the Project from Route 5 would be mostly limited to brief glimpses of Project structures between intervening rooftops and trees; one clear view of the Wallingford Landfill is visible down a 250-foot electric transmission ROW at the intersection of Route 5 and South Elm Street (Figure 17; Figure 20).

Topographical differences between the Project Site and the surroundings also influence the potential for views of the Project. The Project Site is located adjacent to the east bank of the Quinnipiac River in an area of generally lower elevation. Areas to the east and west of the river slope upwards to form larger hills. Although the landfill areas within the Project Site rise above the surrounding grade, areas of the Project Site are at elevations lower than the surrounding roadways to the east (South Cherry Street, Dudley Avenue, and Route 5). Since the Project structures will be located on areas of lower elevation than the surrounding primary viewing areas, the Project structures will appear shorter and less intrusive. These topographic conditions, further influenced by the intervening structures and vegetation, contribute to reduced Project visibility. To the west, Route 15 is located at distances ranging from 0.04 to 0.2 miles west of the Project Area, and South Turnpike Road ranges between 0.11 and 0.25 miles west of the Project Area. From these westerly locations, intervening vegetation within the Quinnipiac State River Park obstruct

views of the Project, although limited visibility of the Town Property could occur from the 250-foot wide electric transmission ROW that traverses those roads (Figure 17; Figure 20). In general, even the higher elevation landfill areas located within the Project Site are only significantly noticeable from their immediate proximity.

The Project will only be fully visible from Ball Street, Pent Road, and an area of South Cherry Street to the east of the Project. Each of these roads run adjacent to the Project Site boundaries, and, therefore, has no intervening structures or vegetation to block views of the Project. In these areas where the Project will be visible, views will be consistent with the existing industrialized character of the location, and will not represent a major alteration of the current appearance of the area. A photographic simulation of the Project from the intersection of South Elm Street and Route 5 and along South Turnpike Road where the electric transmission ROW crosses the roadway is provided in Figures 20 and 21.

6.6 FEDERAL AVIATION ADMINISTRATION DETERMINATION

The Project will have no impact on air navigation facilities. The closest air navigation facility to the Project is the Meriden Markham Municipal Airport located in Meriden, 4.2 miles north of the proposed Project. The next closest air navigation facility to the Project Site is the Maplewood Farms Airport, located in Durham, 6.7 miles to the northeast.

Although no air navigation facilities exist in proximity to the Project, WRE filed three Notices of Proposed Construction or Alteration with the Federal Aviation Administration (FAA) for locations within the Project Site on September 25, 2017. Two locations at the northeast and northwest corners of the Project Area and one location at the point of highest elevation on the Project Area were filed with the FAA; elevations on the MIRA Property are lower and would be less likely to be considered to be navigation concerns. On October 3, 2017, the FAA issued Determinations of No Hazard to Air Navigation for each of the filed structures. The Determinations of No Hazard to Air Navigation are provided in Appendix K.

6.7 HISTORIC AND ARCHAEOLOGICAL RESOURCES

Correspondence was provided to the Connecticut Department of Economic and Community Development, State Historic Preservation Office (SHPO), on October 5, 2017 (see Appendix L) that described the Project setting to determine the need for any survey consideration associated with historical or archaeological resources at the Project Site. In a letter dated November 1, 2017 (also provided in Appendix L), the SHPO confirmed that no archaeological investigations are warranted and that no historic properties will be affected by the Project.

6.8 RECREATION AND OTHER SURROUNDING FEATURES

The Project will not adversely impact surrounding recreational and community resources. The Project Site is located in an area with significant industrial and commercial development, with as many as 16 commercial and industrial businesses within 0.6 miles of the Project Site to the north, east, and south. As described in Section 6.5, views of the Project Site are mostly blocked by intervening industrial structures, vegetation, and topography, and are restricted to limited views along Route 5 and South Turnpike Road, with clearer views of the Project Site provided along Ball Street and Pent Road located directly adjacent to the Project Site. There is one recreational and community resource which lies in close proximity to the Project Site, and this resource is described further below.

The closest recreational resource to the Project is the Quinnipiac River State Park. The Quinnipiac River State Park is comprised of approximately 320 acres of land located along approximately 6 miles of the Quinnipiac River (Figure 22). Four miles of the 24-mile Quinnipiac Trail pass through the park, leading south from Toelles Road to a barred gate access at Banton Street; therefore, the formal trails associated with the park are located south of the Project Site. Smaller segments of the park are mapped in areas located between Route 15 and the Project Site. As the Quinnipiac River State Park is within an active floodplain, accessibility can be seasonally difficult. Its primary use is for passive recreation and wildlife viewing. CTDEEP mapping indicates that bowhunting for deer is the only authorized hunting use of the area. The Project layout avoids the field-delineated forested floodplains that immediately surround the portion of the Quinnipiac River State Park that is most proximate, and is approximately 625 feet from the larger area of this park located south of Toelles Road. No impact to the use and enjoyment of the park is anticipated as a result of the Project.

6.9 WATERCOURSES, FLOODPLAIN, AND WETLANDS

Resources at the Project Site have been identified based on mapping resources and field reconnaissance that occurred between April and December 2017. The Project will avoid impacts to watercourses and floodplain, and direct wetland impact will be limited to one small area where an existing, functional access road currently extends through wetland-designated soils. No direct impact to potential vernal pools is proposed, and vernal pool function is anticipated to be minimally affected as a result of the Project. Additional details are provided below.

6.9.1 Watercourses

The major watercourse in the vicinity of the Project is the Quinnipiac River, which is located between the Project Site's westerly border and Route 15. The Quinnipiac River is an approximately 38-mile river flowing north-south into Long Island Sound from headwaters in Plainville, Connecticut. It varies in depth and width

as it extends along the Project Site vicinity. Observed depths varied from 3 to 5 feet, with banks between 10 and 100 feet wide, and 5 to 20 foot slopes. The substrate is a mixture of sand and muck to the north, transitioning to cobble/gravel/sand further south. In places, the banks of the river appeared severely undercut and eroded, exposing tree roots. No Project features are proposed within or near the Quinnipiac River; at its closest, the Project is located at least 100 feet from the river.

Two wetland swales were also identified on the Project Site (Figure 23), each of which were identified as man-made drainage features in which hydrophytic vegetation was growing:

- Swale 1, located on the Town Property to the north of the Project Area and feeding Wetland A1, is an intermittently flowing channel approximately 2 feet in width with wetland vegetation and evidence of scour. The banks are approximately 3 to 4 feet high and steeply sloped as a result of erosion and water velocity. Overland flow converges at the top shoulder of the steep (5 to 10 percent) slope, creating the start of the channel.
- Swale 2 is a defined channel located within the Town Property along the southeasterly slope of the Wallingford Landfill. This created drainage swale is a stormwater feature that receives storm drain and overland flow from the Wallingford Landfill. As such, the wetland vegetation (i.e., common reed) present within the channel appeared to be periodically cut for maintenance. Standing water remains in the channel following particular storm events, and ultimately discharges across the edge of the Wallingford Landfill and into the Quinnipiac River. No Project features are proposed in Swale 2, although its existing use for stormwater management is expected to continue with the Project in place.

As outlined above, no impact to watercourses or wetland ditches is anticipated in association with the Project.

6.9.2 Floodplain

Mapped 100-year floodplain extends along the Quinnipiac River, as shown on Figure 24. As can be seen, the width of the floodplain varies considerably within the Project Site, influenced by topography. On the MIRA Property the 100-year floodplain is most expansive, utilizing narrow topographic depressions that extend, in some cases, approximately two thirds of the way to Pent Road. As noted in Section 6.10.2, CTDEEP's Natural Diversity Data Base (NDDB) program has identified forested floodplain as a habitat resource type of value. The Project will not locate features within the 100-year floodplain, nor within the field-confirmed location of the forest floodplain resource, and will avoid impact to flood storage and habitat function, as well as to avoid flooding risks to Project-related equipment.

6.9.3 Wetlands

Details of the wetlands within the Project Site are provided in the Wetland Report (Appendix M). The majority of the wetlands identified within the Project Site are associated with the Quinnipiac River floodplain; in fact, the floodplain forest area – although not necessarily federally jurisdictional wetland – is all classified as state-jurisdictional wetland. Wetlands that have been assigned numbers are considered both federally and state jurisdictional (with the exception of Wetland A2h and the roadway portion of Wetland B4, which are considered state jurisdictional only). The A-series wetlands reflect the riparian wetland system consisting of alluvial floodplains associated with the Quinnipiac River; both forested and emergent wetlands occur within this wetland system. The B-series wetlands extend from the Quinnipiac River floodplain easterly across the MIRA Property. The B-series wetlands are generally forested (with some emergent areas) and sinuous as they, similar to the river floodplain, occur in lower elevations areas within the Project Site. Although the qualities of various components of this wetland system vary, they are generally of similar character. One small isolated wetland (Wetland C) is located on the Town Property, to the west of the Wallingford Landfill. Three small isolated wetland features are interspersed through the MIRA Property (Wetlands D, E and F). Additional details regarding the wetlands are provided in Appendix M. Note that the entire Project Site has a long history of disturbance that has influenced the integrity and configuration of the wetland systems present, although appropriate functions and values continue to be supported.

The Project layout has prioritized avoidance of wetlands. The locations selected for panels and access roads utilize upland areas only, except in one location (in Wetland B5) where an existing, functional road extends through state-jurisdictional wetland soils. In this location (and in one other location where an existing road extends between Wetlands B3 and B4), the Project will utilize narrow accessways and will not extend the impact outside of the existing roadbed. A total of 800 square feet of state-jurisdictional wetland impact will result from use of the existing access road for panel construction and maintenance.

BMPs will be utilized for erosion and sediment control both during construction and operation in order to avoid the potential for indirect impact to wetlands. The stormwater management design reflected in Section 6.12 is also intended to preserve wetland hydrology, quality and function.

6.9.4 Potential Vernal Pool Assessment

The potential presence of vernal pools was also assessed during field investigations. Survey methods included a visual assessment of the vernal pool habitat, results of prior dip-net surveys to identify amphibian larvae during the breeding season, and visual surveys of the Vernal Pool Envelope (VPE)/Critical Terrestrial Habitat (CTH) through much of the growing season. Field investigations were conducted in late April, mid to late May, early June, October, and November 2017. Prior surveys reviewed did not indicate egg masses were observed in locations identified as potential vernal pool (PVP) habitat, although wood frog adults and juveniles were observed in certain locations later in the season. No spotted salamander (*Ambystoma*

maculatum) activity or indicators were observed, but use of portions of the Project Site by that species is possible. For formal confirmation of the status of these potential vernal pool areas, WRE will conduct additional, systematic field evaluation of PVPs during the spring 2018 season. This may eliminate certain areas as PVPs, but could also identify other locations where vernal pool activity occurs.

In accordance with *Best Development Practices: Conserving Pool-Breeding Amphibians in Residential and Commercial Developments in the Northeastern United States* (Calhoun and Klemens 2002), Project-related layout was designed to remain at least 100 feet from all areas identified as PVPs in order to preserve any potential existing VPE habitat to the greatest extent possible. All of the 100-foot VPEs will be completely avoided by the arrays, although a number of the PVPs (#2, #3, #4, #5, #7, #7A, and #8) have existing features located within 100 feet. For PVP #1, installation of the fence and tree clearing will result in a change to approximately 4 percent of its VPE, although animal movement will not be restricted by these activities. PVPs #7, #7A, and #8 have existing woods roads, access roads, or cleared areas within their VPEs (see Figure 25); the Project will utilize the existing roads that extend through these areas for access. This reflects approximately 6 percent and 3 percent of the VPE for PVPs #7 and #7A, respectively. For PVP #8, the existing road must be slightly adjusted (to stay within the MIRA Property boundary) and extended to allow for safe vehicle turning. With the additional proposed activities, approximately 12 percent of the VPE will be utilized for access purposes, fence installation and tree clearing. All of the remaining PVPs will have no Project activities within the respective VPEs.

While vernal pool-dependent species require vernal pool (aquatic) habitat for breeding and egg and juvenile development, vernal pool amphibian species depend on the surrounding terrestrial habitat for the majority of their habitation and movement. Therefore, a 650-foot area of potential CTH, extending beyond the VPE, was examined for each potential vernal pool to determine whether Project-related activities would occur in greater than 25 percent of the CTH. Note that existing natural and developed features (e.g., the Quinnipiac River, roadways, ROWs, and other development) also impinge on the CTH radius for certain PVP areas. Additional detail is provided in Appendix M. For only three PVP areas does the Project comprise more than 25 percent of the CTH. The Project will result in development within approximately 28 percent of the CTH of PVP #6, approximately 29 percent of the CTH of PVP #7, and approximately 38 percent of the CTH of PVP #7A. Given the configuration of wetland and upland within this portion of the Project Site and the design goal of wetland avoidance, the solar panels designated in this area are positioned within the available upland and, therefore, do reflect impact within terrestrial habitat. However, solar installations are unique among major development types, in that they avoid many of the legacy mortality sources associated with more active development and allow for the movement of animals within and beyond the moderately sized array fields. The array field will not result in the ongoing impact and mortality to amphibians normally attributed to road mortality, de-icing compounds, storm drain capture, or pesticide/herbicide/fertilizer use. Although vernal pool species will not be excluded from the Project Area, the Project and associated clearing does reflect a qualitative change in habitat that will influence the character of available terrestrial habitat.

6.10 WILDLIFE AND HABITAT

The Project Site is surrounded by development in the form of active roadways and industrial uses, although the Quinnipiac River corridor that extends between Route 15 and the Project Site's westerly boundary provides a corridor for wildlife species movement. The Project Site includes areas of significant existing and historic disturbance associated with landfill and former residential and agricultural uses. Approximately half of the Project Site can be classified as degraded, disturbed, marginal, or developed habitat. These areas include both upland and wetland habitat, and generally have a disturbed soil profile. Areas can be generalized as non-vegetated pervious or impervious surfaces (e.g., heavily used dirt roads or pavement) or weedy non-native vegetation (e.g., landfill cap, road edges, and scrub). Typical open-canopy herbaceous species include orchard grass (*Dactylus granulata*), vetch (*Vicia* sp.), crown-vetch (*Coronilla varia*), spotted knapweed (*Centaurea stoebe*), and fescue (*Festuca* spp.). Some areas of marginal forest transition between more heavily disturbed areas and undisturbed/higher quality habitat. Although transient wildlife usage through these areas likely occurs, its value is considered low.

In 2003, a grassland survey was initiated considering potential locations suitable for grassland bird restoration; studies continued through 2007. The Wallingford Landfill was selected due to its proximity to the Quinnipiac River, a north-south trending bird migration corridor. The conclusion of the study was that "…in its current state, the grassland bird habitat quality of the site is either constrained or compromised…" and identified the following factors:

- The predominant soils on site now consist of "made" land due to disposal activities, and therefore are susceptible to invasion by non-native invasive vegetation;
- The site does not lie adjacent to known grassland bird management areas;
- The size and configuration of the site may not be optimal in certain areas for sensitive grassland bird species; and
- Non-native herbaceous and woody plant species have become established on-site.

Nonetheless recommendations were developed to enhance potential use for nesting birds. WRE intends to implement several of these recommendations, and other measures, in order to provide additional habitat benefit. Measures planned include: planting of pollinator species in suitable locations throughout the Project installation; invasive species control; installation of kestrel nest and owl nest boxes; and restricting mowing to less frequent intervals and/or to avoid the grassland bird nesting season.

The Project Site provides habitat for various disturbance tolerant and opportunistic species. Species observed by sound, tracks, or visual identification include: deer, raccoon, skunk, fox, birds (Eastern wood pewee, veery, wood thrush, red-eyed vireo, American robin), chipmunks, squirrels, garter snakes, turtles (eastern box, wood, painted, and snapping), frogs (green, pickerel, wood), toads, and fish (sunfish, dace, darter, white sucker). However, the balance of the Project Site includes several distinct habitat types that

were considered carefully in the design of the Project. In addition, the capped landfill has the potential to provide certain wildlife usage opportunities for species that would utilize an open field habitat. The following habitats are discussed in the sections below: floodplain forest; stripped barren; and deciduous forest. This is followed by a summary of consultation with CTDEEP's NDDB program (Appendix N), and a discussion of anticipated impacts and planned construction and operational BMPs intended to minimize species impacts. Additional details regarding habitat-related studies can be found in Appendix O.

6.10.1 Floodplain Forest Habitat

Forested floodplain, mapped as Critical Habitat by NDDB (Figure 26), is located west of the Project Site, with portions of forested floodplain extending into areas of lower elevation of the MIRA Property. It reflects a floodplain of the Quinnipiac River, a medium-gradient river located at the southern edge of the Lower Connecticut River Valley (Ecoregion Subsection from Keys et al. 1995). Approximately 28 acres are mapped by NDDB, although field investigations have identified that a considerably smaller area (6.6 acres) is confirmed to have attributes consistent with this habitat type, as also shown on Figure 26.

This habitat includes seasonally flooded, low elevation terraces on glacial till derived from sandstone, shale, and basalt parent material. Terraces are forested with a diversity of mature tree species including sycamore (*Platanus occidentalis*), cottonwood (*Populus deltoides*), maple (*Acer* spp.), ash (*Fraxinus* spp.), and tulip tree (*Liriodendron tulipifera*). Understory includes early spring ephemerals, including wild leak (*Allium tricoccum*), Virginia spring-beauty (*Claytonia virginica*), trout lily (*Erythronium americanum*), and dwarf ginseng (*Panax trifolius*), as well as colonies of Japanese stilt-grass (*Microstegium vimineum*), white-tinged sedge (*Carex albicans*), stinging nettle (*Urtica dioica*), and wood-nettle (*Laportea canadensis*). Common woody shrubs include sweet pepperbush (*Clethra alnifolia*) and non-native shrub honeysuckle (*Lonicera* sp.).

A robust population of the state-listed, endangered false mermaid-weed (*Floerkea proserpinacoides*) was identified during field visits in many locations along the Quinnipiac River bank. The highest value habitat area occurs in closer proximity to the river, with habitat value decreasing with proximity to disturbed and developed areas within the Project Site as fingers of forested floodplain extend to the east. Forested floodplain areas within the Project Site have been historically disturbed and are currently traversed by a natural gas pipeline corridor, an oil pipeline corridor, electric transmission line ROWs, and unpaved roads that previously served as access to former development within the MIRA Property, some of which remain in current use.

The Project will have no features located within the field-confirmed forested floodplain habitat, and thus will avoid this critical habitat within which the populations of false mermaidweed were found. By avoiding this higher value habitat (still influenced by the proximity of anthropogenic influences, but most closely associated with the Quinnipiac River), the Project is focused on areas within the Project Site of a less critical nature from a habitat perspective.

Mitigation measures will be incorporated into the Project to allow for ongoing use of the Project area by amphibians and turtles, as summarized in Section 6.10.7.

6.10.2 Stripped Barren Habitat

A Sand Barren area that is mapped as Critical Habitat by the Connecticut NDDB is located approximately 1,670 feet or more to the southeast of the Project Site (Figure 26). Within the Project Site, a small (0.83-acre) low quality area of Stripped Barren habitat was documented on the northeastern edge of the MIRA Property. This area is distinct from the NDDB-mapped Sand Barren in that it is anthropogenically derived, as opposed to being a naturally-occurring community. The dominant cover type in this area is bare sand, a remnant of former land stripping or mining. This area, as well as a large area surrounding it, was stripped and apparently mined for the underlying minerals, with work continuing as recently as the 1980s (according to archival photography). The adjacent cover types are degraded, as might be expected of an area historically stripped to mineral soils and abandoned.

Unlike the intact Sand Barren Habitat located 1,670 or more feet to the south of the Study Area, which has associated Dry Acidic Forest and pitch pine woodland in its surroundings, this Stripped Barren area is dominated by bare sand, little bluestem and poverty grass. It also supports numerous non-native and invasive plants around its perimeter including cheatgrass (*Bromus tectorum*), spotted knapweed, autumn olive (*Elaeagnus umbellata*), common reed (*Phragmites australis*), as well as clustered sedge (*Carex cumulata*) and dwarf dandelion (*Krigia biflora*). The above attributes, as well as its modest dimensions, indicate that this area is the last remnant of the historically disturbed and excavated zone to revegetate, likely due to it being the area least capable of retaining soil moisture. With time and soil stabilization by adventitious mosses and lichens, this area is likely to succeed to predominantly non-native species on par with its surroundings. Within this patch habitat, several specimens of frostweed were observed, potentially Low Frostweed (*Crocanthemum propinquum*), which is a State Special Concern species. Targeted listed insect species were not observed in this location during several seasonally appropriate site-days.

6.10.3 Deciduous Forest Habitat

The Project Site, particularly in the central portion of the MIRA Property, includes areas of deciduous non-floodplain forest (approximately 16 acres), as shown on Figure 26. Medium to large trees (>10-24 inches diameter at breast height (dbh)) are present, particularly in areas where historic disturbances have not recently occurred. The canopy is a mixture of deciduous species, but primarily includes American beech (*Fagus frandifolia*), white oak (*Quercus alba*), red oak (*Q. ruba*), black oak (*Q. velutina*), red maple (*Acer rubrum*), tulip tree, black birch (*Betula lenta*), and yellow birch (*Betula alleghaniensis*). Shrubs include maple leaf viburnum (*Viburnum acerifolium*), sweet pepperbush and spicebush (*Lindera benzoin*). Herbs are variable, but in mesic to wetland conditions ferns dominate and include cinnamon fern (*Osmundastrum cinnamomeum*), royal fern (*Osmunda regalis*), and New York fern (*Parathelypteris noveboracensis*). Although larger tracts of upland forest exist, several of the upland forest areas have surrounding wetlands.

Numerous utility easements (above and below ground) extend through and bisect the forest area, as well as existing and former access roads and paths. A pump house is located just south of the Project Site that is accessed using roads within the MIRA Property.

Several panel installations are proposed within upland forest areas on the MIRA Property. In addition, several individual trees currently located on the landfill cap will be removed. A total of approximately 17 acres of tree clearing will be associated with the Project (Figure 12), including areas that will be cleared to minimize panel shading. Tree clearing will be restricted to occur only between May 1 and August 15 in minimize potential impact to tree roosting bats. Habitat usage by potential vernal pool species is addressed in Section 6.9.4. As noted above, measures will be implemented to continue to allow species to move freely throughout the area and continue to utilize the areas where panels will be placed (discussed further in Section 6.10.12).

6.10.4 Rare, Threatened and Endangered Plants and Wildlife

Correspondence with CTDEEP's NDDB program (provided in Appendix N) identified the various critical habitats discussed above, as well as a number of potentially present species. Correspondence focused on the two distinct areas of the Project Site, as outlined below.

6.10.4.1 Town Property

The NDDB correspondence received for this property reflected the presence of floodplain forest associated with the Quinnipiac River and the state-listed false mermaid weed (*Floerkea proserpinacoides*) as potentially present within floodplain on-site. As noted above, several populations of false mermaid weed were identified within the Town Property's floodplain. However, panels will be installed only within former landfill areas on this portion of the Project Site. Activities will avoid work within the floodplain and, therefore, will not result in impact to either of the identified resources.

6.10.4.2 MIRA Property

The NDDB correspondence identified that floodplain forest associated with the Quinnipiac River extends onto the property. As is the case on the Town Property, no Project activities are proposed within the forested floodplain. False mermaid weed was also identified as a species with potential presence at this property. Although the populations were not as numerous on this property, the species was identified along the banks of the Quinnipiac River within the floodplain. No work is proposed in this area.

The following animal species identified in NDDB correspondence as potentially present at MIRA Property have more open sandy soil habitat requirements:

- Ground beetle (*Amara chalcea*);
- Big sand tiger beetle (*Cicindela formosa generosa*);
- Dark-bellied tiger beetle (*Cincindela tranquebarica*);

- False heather underwing (*Drasteria garaphica atlantica*);
- Violet dart moth (*Euxoa violaris*);
- Ground beetle (*Helluomorphoides praeustus bicolor*);
- Scribbled sallow moth (*Sympistis perscripta*);
- Spinose flower moth (*Schinia spinosae*); and
- Grassland thaumatopsis (*Thaumatopsis edonis*).

In addition, these state-listed plant species identified as potentially present occur in sandy habitats:

- Beach needle grass (*Aristida tuberculosa*);
- Low frostweed (*Crochanthemum propinquum*); and
- Sickle-leaved golden aster (*Pityopsis falcate*).

One area of sandy, open soils is located within the MIRA Property (as described in Section 6.10.2). Although low quality and formerly disturbed due to historic development on the property, the approximately 0.8-acre area has sandy soils. None of the species listed above were observed in this area during various field surveys, with the exception of the potential occurrence of low frostweed. Although these species have the potential to be present, the very small area of suitable habitat within which such species would thrive is expected to limit their potential presence and the value of this small habitat area for their use. As can be seen in Figure 26, the preliminary layout indicates that solar panels are planned for this area, in order to take advantage of non-wetland areas contiguous with previous and existing developed areas. Should it be confirmed that low frostweed is present, individuals will be transplanted to a location where viability can be preserved.

Other insects identified as potential inhabitants of the MIRA Property are as follows:

- Northern dusk-singing cicada (*Tibicen auletes*) – This cicada occurs in dry oak forests with sandy soils. During field surveys, this type of habitat was not identified on the MIRA Property, although it does occur off-site more than 1,600 feet to the south.
- Yellow-horned beaded lacewing (*Lomaamyia flavicornis*) – This insect occurs in grassland in pitch pine/scrub oak settings. During field surveys, this type of habitat was not identified on the MIRA Property, although it does occur off-site more than 1,600 feet to the south.
- Black-eyed zale (*Zale curema*) – This moth occurs in pitch pine woodlands and its host is pitch pine. During field surveys, this type of habitat was not identified on the MIRA Property, although it does occur off-site more than 1,600 feet to the south.

- Oblique zale (*Zale obliqua*) – This moth occurs in barrens or pine plantations, and its host plants include pitch pine, jack pine, and red pine. During field surveys, this type of habitat was not identified on the MIRA Property, although it does occur off-site more than 1,600 feet to the south.

6.10.5 Summary and Proposed Construction Practices

The Project reflects an opportunity for the redevelopment and reuse of currently underutilized legacy industrial-zoned property, and has carefully considered the location of important natural resources, including forested floodplain in its proposed layout and design. In addition to utilizing as much previously developed property as possible, where habitat value is lower, the following measures will be implemented.

6.10.5.1 Potential Vernal Pools

Prior to construction, each of the identified PVPs will be examined in the appropriate spring season to more definitively determine whether classification and protection as a vernal pool is appropriate. The examination will consist of standardized dip-netting for invertebrates and pre-metamorphic amphibians, egg mass counts/surveys, and pH and maximum depth measurements. No additional encroachment is proposed in such areas, allowing for species to use the areas in similar fashion to current uses.

6.10.5.2 Turtle Protection

For any work done during the turtles' active period of April 1 through November 1, the precautionary measures will be employed, as described below.

Prior to Construction

- Silt fencing shall be installed around the work areas prior to construction and prior to the beginning or after the conclusion of the turtle hibernation period, between November 1 and April 1.
- The area within the perimeter of the silt fence shall be canvassed by a qualified individual(s) one day prior to installation of the silt fencing and for five consecutive days after installation for the presence of turtles. Any turtles found within the bounds of the silt fence shall be documented, individually marked, and relocated outside of the bounds of the silt fence in an area of suitable habitat.

During Construction

- Work crews shall be apprised of the species description and possible presence prior to construction. Laminated posters describing the species of interest will be posted at construction trailers and other focal points, as appropriate.
- Work crews shall search the work area for turtles prior to the start of each construction day.

- Any turtles encountered during the work shall be photographed and moved unharmed to an area immediately outside the fenced work area and oriented in the same direction it was walking when found.
- All precautionary measures will be taken to avoid degradation to wetland habitats including any wet meadows and seasonal pools.
- Work conducted in these habitats during the early morning and evening hours should occur with special care not to harm basking or foraging individuals.
- No heavy machinery or vehicles shall be parked in any turtle habitat and precautions shall be taken when the machinery is traveling to the work area to avoid turtles.
- All silt fencing shall be removed after work is completed when soils are stable so that reptile and amphibian movement between uplands and wetlands is not restricted.
- Security fencing installed around the solar panels that are proximate to wetland areas will incorporate 6-inch gaps to facilitate species movement while still ensuring appropriate security.

Post-Construction

- Regular inspections of the fencing will be conducted to ensure that gaps for species movement remain unrestricted.
- Mowing will be restricted, as possible, to occur two times per year outside of active turtle movement periods. During times of active turtle movement, any necessary mowing will adjust the mower blade height to minimize the potential for species impact.

6.10.5.3 Other Measures

Additional measures for species protection and enhancement that will be employed for the Project include:

- Tree clearing will not occur from May 1 through August 15 in order to limit potential impacts to tree-roosting bat species that may occur within the range of the Project Site.
- Prior to installation of the panels, the stripped barren habitat will be evaluated to confirm that no listed species are present. To the extent any are identified, they will be removed from the work area and transplanted in a nearby area of suitable habitat characteristics in coordination with NDDB.
- Stormwater BMPs will used during construction and operation to protect the surrounding area from erosion and sedimentation, and to protect surrounding water quality;
- Planting of pollinator species in suitable locations throughout the Project installation;
- Use of warm season grasses for reseeding;
- Allowing sandy habitats to retain bare patches of soil;

- Invasive species control;
- Installation of a kestrel nest box and an owl nest box; and
- Restricting mowing to less frequent intervals and/or to avoid the grassland bird nesting and active turtle seasons.

6.11 WATER SUPPLY

The Project will not impact public water supplies or groundwater both because it does not directly use water resources and due to its setting and characteristics that will avoid the potential for indirect impact to other water users.

The Town of Wallingford obtains the majority of its water supplies from reservoirs located outside of major development areas in Wallingford, Durham, and Guilford, Connecticut. The Project Site is not located within a Wallingford Aquifer Protection Area or a Wallingford Watershed Protection District, nor is it located within aquifer or watershed protection districts of the surrounding townships. The Project is within the Quinnipiac River Watershed Sub-basin of the Quinnipiac River Watershed, and water flowing across the Project Site discharges toward the Quinnipiac River.

As shown on Figure 27, groundwater beneath the Project Site is classified as GB and GC ground water classifications by CTDEEP, which are classifications not suitable for drinking water. Approximately 37 percent of the Project Site (48 acres) is classified as GB groundwater quality, with an industrial and miscellaneous, non-drinking supply designated use. The remaining 61 percent (79 acres) of the Project Site is classified as GC groundwater quality which is associated with areas of permitted waste disposal and is not suitable for drinking. According to the Wallingford Water Division, the areas around South Cherry Street, Toelles Road, and Route 5 are provided with Town water and do not use groundwater wells as a source of drinking water.

During operation, the Project will not require water use and will not generate wastewater. The Project will be unstaffed and, therefore, no potable water supplies will be provided and no sanitary discharges will occur. No hazardous materials or fuels will be stored at the Project Site during operation.

During construction, water may be used for dust control, supplied by tanker trucks. Portable restrooms will be used for workers during construction. Management of stormwater flows on the Project Site during construction and operation of the Project is discussed in Section 6.12; no resulting quality effect to wells is anticipated both because no such wells are in proximity to the Project Site and because erosion and sediment control measures will be used to prevent off-site impacts.

6.12 STORMWATER

The Project has been designed to comply with applicable stormwater and erosion and sediment control requirements, including the Stormwater Manual for both Water Quality and Recharge; the SESC Guidelines; and Solar Stormwater Guidance. The Project will also be consistent with existing stormwater management approvals and procedures currently in effect at the Wallingford Landfill. Consistent with the CTDEEP General Permit for the Discharge of Stormwater and Dewatering Wastewater for Construction Activities (October 1, 2013), a SWPCP will be prepared. The SWPCP and stormwater management systems within the Project Area will be designed to minimize pollution caused by soil erosion and sedimentation during and after construction and stormwater pollution caused by use of the Project Area after construction is completed.

A preliminary SWPCP has been prepared (as provided in Appendix E). Consistent with the requirements of the General Permit, the SWPCP includes plans showing where stormwater management and erosion and sediment control features are proposed to be located, as well as a narrative describing the Project, construction sequencing, control measures, and inspection and monitoring program for the Project Area.

No major grading is proposed in association with the Project. Instead, the panel installation will adjust foundations to accommodate existing grade. While the nature of the Project (solar panel installation) does not include significant grading with an associated soil disturbance, WRE recognizes that the Project includes the use of construction equipment and that vegetation removal is required in some locations. Particular care will be taken during the construction phase portion of the Project to minimize disturbance and manage erosion and sediment control throughout the Project Site. The Project will be phased to minimize disturbance of over 5 acres at any one time, with the exception of the necessary tree clearing. Prior to soil-disturbing activities, appropriate BMPs will be installed to prevent erosion and sedimentation and to control activities within the Project Area. Depending upon factors such as drainage area, disturbance limits, existing ground cover, and existing systems (e.g., maintaining existing landfill caps), appropriate erosion and sediment control measures will be implemented. Preliminary layout of these measures, such as stabilized construction entrances, silt fence, silt fence, sediment basins, and sediment traps can be seen in Appendix E.

While the Project is not anticipated to have significant impacts to the post-development stormwater flows as a result of installing the solar panels, the Project will include the installation of permanent unpaved access roads in the limited locations where existing roads are not available. To the extent these roads result in minor localized increases to the post-development flow (as compared to pre-development flows) permanent management features will be installed. The roadway stormwater management features are anticipated to consist primarily of long, linear, water quality swales. These vegetated open channels paralleling the roads will be designed to treat and attenuate the water quality volume and convey excess stormwater runoff. The use of water quality swales where needed along the roads will minimize or eliminate

the need for lager, site-wide basins that may not capture relevant runoff and could have a more significant impact on wetland areas.

An updated SWPCP will be incorporated in the D&M Plan, and appropriate submittals will be made in a timely fashion to CTDEEP that will include identification of specific contractors with responsibility for implementation of the SPCP requirements.

6.13 GEOLOGY AND SOILS

The Project will not impact bedrock formations or surficial geology beneath the Project Site and will have a limited impact on Project Site soils. The Project Site is located within the Central Lowlands physiographic region and is underlain by New Haven Arkose bedrock, a reddish, medium- to coarse-grained, poorly sorted sedimentary rock. Surficial geology consists of poorly sorted glacial till. Soils on the Project Site (Figure 28) consist of soils placed over the municipal and industrial landfills, as well as the following soil types, according to the Natural Resource Conservation Web Soil Survey database:

- Penwood loamy sand, 0 to 3 percent slopes;
- Rippowam fine sandy loam;
- Penwood loamy sand, 3 to 8 percent slopes;
- Pootatuck fine sandy loam;
- Deerfield loamy fine sand, 0 to 3 percent slopes; and
- Timakwa and Natchaug soils, 0 to 2 percent slopes;

Although many of these soil types are classified as Farmland of Statewide Important or Prime Farmland (approximately 52 percent [60 acres] of the Project Site is mapped as Farmland of Statewide Importance, and approximately 5 percent [6 acres] of the Project Site is mapped as Prime Farmland), the mapped status is not indicative of its agricultural quality or use. The mapped Prime Farmland soils occur entirely in the floodplain area adjacent to the Quinnipiac River, and, therefore, will not be affected by the Project, but would be difficult for farming use due to its characteristics. Other portions of the Project Site have not been used for agricultural purposes since the mid-1940s, when industrial buildings were first constructed along the southeastern Project Site boundary. Since that time, the entire Project Site had been subject to historic contamination issues associated with industrial uses, and is no longer suitable for agricultural production. The Project Site is uniquely suited for placement of solar panels to bring this underutilized industrial property, which has been rendered inappropriate for agricultural uses, back to productive use.

PV panels are not a land intrusive technology and will not require bedrock penetration or alteration of the surface geology. Even in the limited areas where traditional foundation design will be used, supporting piles will be driven to a depth of only approximately 10 feet (as specified by the manufacturer and as dictated by conditions at each specific installation site) for panel support. The majority of the panels will use a ballast foundation design, set on the ground surface. During construction some shallow impact to soils could occur,

but erosion and sedimentation control measures will be used to minimize impact during construction and restore stable soil conditions upon completion of installations. Where vegetative cover exists, it will be maintained under the solar panels (as also discussed in Section 6.10.7 relative to habitat value goals).

Installation of the solar panels on the landfill sites will be completed so as not to disturb the integrity of the landfill caps, as discussed in Section 3.3.1. Topsoil removal will be extremely limited for this Project, but limited disturbance may occur in some locations, especially where subsurface conditions allow for placement of infrastructure underground.

7.0 CONCLUSIONS

The Project clearly meets the standards set forth in CGS §16-50k(a). Specifically:

- The Project meets CTDEEP's air and water quality standards, with no material emissions associated with either construction or operation and water quality standards associated with construction and operational stormwater management a primary focus of the Project's design;
- The Project has been configured to avoid and minimize other environmental impacts by using to the greatest extent possible portions of the Project Site that have been subject to former industrial uses; and
- While the need for formal consideration of prime farmland or forest land is not required for the Project, as it holds a contract under the CTDEEP RFP process, the Project will not alter areas of prime farmland or core forest.

The Project uniquely meets Connecticut's goals for siting renewable energy resources on former industrial properties and provides an important ability to appropriately use industrially zoned land within the Town of Wallingford to bring enhanced economic benefit.