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March 2, 2018

VIA ELECTRONIC MAIL AND U.S. MAIL

Melanie Bachman
Executive Director/Staff Attorney
Connecticut Siting Council
10 Franklin Square
New Britain, CT 06051

Re: Petition No. 1339 – Petition of Wallingford Renewable Energy LLC for a Declaratory Ruling that no Certificate of Environmental Compatibility and Public Need is Required for a 19.99 MW AC Solar Photovoltaic Electric Generating Facility in Wallingford, Connecticut

Dear Ms. Bachman:

I am writing on behalf of my client, Wallingford Renewable Energy (“WRE”) in connection with the above-referenced Petition. With this letter, I am enclosing an original and 16 copies of DWW’s responses to the Siting Council’s First Set of Interrogatories, issued on February 15, 2018. Please accept the original and 15 copies of these responses, and please date-stamp the remaining copy of the responses and return it to me in the enclosed envelope.

In drafting the enclosed interrogatory responses, several issues came to WRE’s attention as it reviewed the Petition in order to fashion its responses. In doing so, WRE found two instances where information may have been confusing and WRE wishes to rectify any such situations.

The first instance of this comes in Section 8.4 of Tab E of the Petition. The second line of this section indicates that Conn. Gen. Stat. § 22a-60 applies to transfers of permits. That was a typographical error. The correct statutory citation should be Conn. Gen. Stat. § 22a-60.

In addition, page 11 of the Petition states that the Project will be constructed “with no subsurface penetrations,” but page 23 states that the Project will be constructed “with minimal land intrusion.” In reviewing these pages, WRE could see how these passages may prove confusing at first glance. WRE therefore wishes to inform the Council that it is undertaking geotechnical surveys of the site at this time, with the knowledge and permission of CT DEEP. Final determinations as to the construction of the Project will not be able to be made until this geotechnical survey is completed. That having been said, WRE intends to have minimal land

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intrusion on the landfill portion of the project as a result of its construction of the project, and will not utilize driven piles (thereby avoiding subsurface penetrations). Some minor topsoil disruption is expected for placement of ballast, shallow foundations, and temporary installation. In drafting the Petition, WRE did not contemplate that this type of activity should be viewed as "penetration" of the subsurface, but as minor surficial ground disturbance.

Should you have any questions concerning this submittal, please contact me at your convenience. I certify that copies of this submittal have been made to all parties on the Petition's service list.

Sincerely,



Lee D. Hoffman

Enclosures

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

Petition of Wallingford Renewable Energy LLC
for a Declaratory Ruling pursuant to C.G.S. §4-176
and § 16-50k, for the proposed construction,
maintenance and operation of a 19.99 MW AC
ground-mounted solar photovoltaic electric
generating facility located on approximately
158 acres of 3 contiguous parcels consisting of
the former Wallingford Landfill and 2 parcels
owned by the Materials Innovation and Recycling
Authority west of Pent Road and associated
electrical interconnection to Wallingford Electric
Division's Wallingford Substation in
Wallingford, Connecticut

Petition No. 1339

March 2, 2018

**WALLINGFORD RENEWABLE ENERGY LLC'S RESPONSES TO
THE CONNECTICUT SITING COUNCIL'S FIRST SET OF INTERROGATORIES**

The petitioner, Wallingford Renewable Energy LLC ("WRE" or "the Petitioner"), respectfully submits this response to the Connecticut Siting Council's First Set of Interrogatories in the above-referenced Petition. In response to the Siting Council's Interrogatories, WRE states as follows:

PROJECT DEVELOPMENT

1. If the project is approved, identify all permits necessary for construction and operation and which entity will hold the permit(s).

Please see attached Exhibit 1.

2. In its Power Purchase Agreements (PPAs), is the Petitioner contracted to sell both the electricity and renewable energy certificates (RECs) it expects to generate with the proposed project? Provide the percentages to be sold to each public utility. Would any renewable electricity and/or RECs be sold to the Town of Wallingford?

WRE objects to this Interrogatory as the Interrogatory exceeds the scope of a petition for declaratory ruling pursuant to Conn. Gen. Stat. §§4-176 and 16-50K. Subject to the foregoing objection, WRE states that approximately 80% of the Project's electricity and RECs will be sold

to Eversource Energy, with the remaining 20% to be sold to the United Illuminating Company. No electricity or RECs will be sold to the Town of Wallingford.

3. Since the 20-year term of both PPAs is less than the 35-year term for the long-term lease agreement (or the approximately 35 to 40 year design service life of the project), what would the Petitioner do when the PPAs expire? Are there provisions for any extensions of time in the PPAs? Are there options to renew the PPAs?

WRE objects to this Interrogatory as the Interrogatory exceeds the scope of a petition for declaratory ruling pursuant to Conn. Gen. Stat. §§4-176 and 16-50K. Subject to the foregoing objection, WRE states that the Petitioner currently plans to seek to re-contract the power and RECs or sell the power and RECs in the wholesale market after the initial 20-year term. There are no extensions or options to renew the term of the PPAs.

4. Is the alternating current megawatt capacity of the facility fixed at a certain amount (e.g. 19.99 MW) per the PPAs and/or the RFP?

WRE objects to this Interrogatory as the Interrogatory exceeds the scope of a petition for declaratory ruling pursuant to Conn. Gen. Stat. §§4-176 and 16-50K. Subject to the foregoing objection, WRE states that the PPAs add up to 19.99MW of capacity. The RFP called for less than 20 MW of solar power.

5. Would the petitioner participate in the ISO-NE Forward Capacity Auction? If yes, which auction(s) and capacity commitment period(s)?

WRE objects to this Interrogatory as the Interrogatory exceeds the scope of a petition for declaratory ruling pursuant to Conn. Gen. Stat. §§4-176 and 16-50K. Subject to the foregoing objection, WRE states that there is potential, but no obligation, for the Petitioner to participate in the ISO-NE Forward Capacity Auction. ISO-NE Forward Capacity Auction 13 would be the first auction the Petitioner could participate in. The Petitioner currently has no plans to participate in the ISO-NE forward capacity auction.

PROPOSED SITE

6. Describe the visibility of the proposed project from Quinnipiac River State Park.

As described in Section 6.8 of the Petition, although a portion of the Quinnipiac River State Park extends between the project site and Route 15, the most active portion of that park that includes formal access and trails is located south of Toelles Road. Access to the portion of the park directly west of the Project site is be difficult due to the lack of formal trails, the seasonal inundation of the active floodplain located within this portion of the park, and the industrial nature of the area with fencing restricting access. This portion of the park is also influenced by surrounding industrial properties, existing utility corridors, and the very close proximity of the highway.

This portion of the Quinnipiac River State Park is located west of the main trunk of the Quinnipiac River (as shown in Figure 22 of the Petition) in a narrow swath of land that broadens to the north and the south of the Project site. Vegetation within the wetland floodplains that extend along the river is dense, including both trees and understory that significantly limit line-of-sight. The closest panels are approximately 150 feet from the park, with most of the panels considerably more distant. It is, therefore, unlikely that the panels would be directly visible from most locations within the park. Park users standing within the existing cleared high voltage electric transmission right-of-way would have the potential to experience views similar to those reflected in Figure 21 of the Petition, although the vantage point would be at a closer location along the narrow cleared corridor. The view from this location would still be constrained by trees, and would be expected to include more industrial elements visible in the background.

7. Describe the visibility of the proposed project from the nearest residence.

The nearest residence to the proposed Project is located 920 feet to the north along John Street. As can be seen in Figure 18 of the Petition, the proposed Project is not visible from the nearest residence. Vegetation and several intervening buildings, including the Wallingford Water and Sewer Division offices, the Wallingford Department of Public Utilities Electric Division office, and the Good News Christian Church block views of the Project. Visibility of the proposed Project from John Street will be limited to glimpses between these buildings by passing cars.

ENERGY PRODUCTION

8. Provide the megawatt output of the proposed project in direct current (DC). At 390 Watts DC each, approximately how many solar panels are proposed?

Approximately 56,000 panels.

9. Identify the loss assumption for the proposed project. For example, would the proposed facility provide approximately 19.99 MW AC (total) at its points of interconnection?

Approximately 2% losses are associated with inverters, however, it is anticipated that the Project will provide up to 19.99 MW AC of power at peak output time periods.

10. What is the AC/DC ratio of the proposed project? What design considerations were used to determine the AC/DC ratio of the proposed project?

Approximately 90%. The main design consideration used to determine this ratio was space availability.

11. Page 11 of the Petition notes an angle of 10 degrees above the horizontal. Sheet C-113 shows an angle of 15 degrees (plus or minus one degree). Which angle is correct? Would the angle of the solar panels be the same for both the ballast-mount and post-mount rack configurations?

The 10 degree angle is correct. Tilt angle would be the same for ballast-mount and post-mount configurations.

12. Explain why a solar panel orientation to the south with an angle of 10 or 15 degrees (as applicable) above the horizontal was selected for this facility. Is the project designed to maximize annual energy production or peak load shaving?

The Project is designed to maximize annual energy production.

13. What is the projected capacity factor (expressed as a percentage) for the proposed project?

Approximately 14%.

14. What is the efficiency of the photovoltaic module technology of the proposed project?

The current design utilizes 19.4% efficient modules, but is subject to availability at the time of procurement.

15. Would the power output of the solar panels decline as the panels age? If so, estimate the percent per year.

Yes, degradation is expected at approximately 0.5% per year.

16. Can the project be designed to accommodate future potential battery storage? If so, please describe the function of the battery or other type of storage system? What prediction methods and reports has the Petitioner used to assess total capacity in megawatts and annual energy production in kilowatt-hours for this project, and how are the proposed batteries or other type of energy storage incorporated into those predictions?

No battery or other storage is proposed for the Project at this time. No studies have been done to-date assessing the impact of including battery storage in Project design.

17. Would the impact of soft shading, such as air pollution or hard shading, such as bird droppings or weather events, such as snow or ice accumulation, hail, dust, pollen, etc. reduce the energy production of the proposed project? If so, was this included in the proposed projects capacity factor and/or loss assumptions? Would any of these expose the solar panels to damage? If applicable, what type of methods would be employed to clear the panels of the bird droppings, prey shells, snow and ice accumulation, hail, dust or pollen and at what intervals?

Soiling of the panels as a result of snow, ice, bird droppings, and other factors is expected to reduce the gross output of the facility. The assumption for total annual soiling losses is 4 to 5%. Consistent with projects operating in the region, our expectation is that seasonal rains will

be sufficient to keep the panels clean, and snow removal will not be required on a regular basis. None of the items mentioned are expected to damage the panels.

SITE COMPONENTS AND SOLAR EQUIPMENT

18. Provide the specifications sheets for a) proposed inverters and b) solar photovoltaic panels.

The specific inverters and solar photovoltaic panels have not yet been selected at this time. Final equipment selection will be made in conjunction with final detailed engineering. Given the ever-changing nature of the industry, such selections would be premature at this juncture; however, it would be anticipated that if the Council approves this Petition, such information would be provided to the Council as part of the Petitioner's D&M Plan submittal to the Council. Indicative specification sheets are provided in Exhibit 3.

19. Provide the dimensions for the transformer and inverter pads.

The largest pads on the landfill area with inverters and a transformer are 36' x 10'. In the driven pile areas outside the landfill, the inverters will be mounted to piles, resulting in a pad for the transformer of only 10' x 6'.

20. Figure 11 of the Petition provides an elevation view of electrical equipment. Approximately how tall is the tallest proposed piece of equipment?

The tallest equipment is approximately 72" above the pad surface. The pad floor will be approximately 4"-6" above grade.

21. What is the design wind speed of the solar panel mounts (both rack mounts and ballast mounts)? What prevents the solar panels from separating from either the racking or the foundation during high winds?

The design wind speed is ASCE 7-10 Basic Wind Speed 115 miles per hour, Exposure Category C. Design and engineering for the racking will be completed by a professional structural engineer licensed in Connecticut. The structure will be designed to applicable codes and standards to prevent structural failures.

22. Referencing Sheet C-113 of the Petition, what is the approximate distance(s) between the ground and the top edges of the solar panels for both the post-mount configuration and the ballast-mount configuration?

The approximate distance between the ground and the top edges of the solar panels will be approximately 7 feet depending on local grade and topography.

23. Would existing access potentially require any upgrades such as additional gravel to make it suitable for the construction and maintenance of this proposed solar facility?

Additional gravel may be required to satisfy the final civil design to support the anticipated vehicle type and traffic, as well as requests by the Town of Wallingford to minimize damage to existing points of access.

24. How wide is the aisle width between rows of solar panels (e.g. three feet)? Could the panel rows be installed closer together through panel angle redesign or change of equipment?

The open distance between rows is approximately 40", but could vary depending on solar panel availability, final design and other technical factors. It is not anticipated that the panel rows could be placed substantially closer together, due to anticipated shading issues.

25. What is the color of the solar panels? Are other colors available? Is the glass casing reflective? Are there solar panels available with non-reflective glass? If so, what are the costs and benefits of each type?

The modules have a white backsheet and anodized aluminum frame. The PV cells in the module naturally vary between black and dark blue. Antireflective glass is used to reduce glare to maximize the energy produced. Solar panels with reflective glass are not commercially available due to poor performance.

26. Under Appendix A of the Petition, page 10 of the Stormwater Pollution Control Plan notes that, “The Project will not locate features within the 100-year floodplain...” Is any portion of the proposed project located within the 500-year flood zone? If yes, indicate which portion(s) of the project area are located within such flood zones, and provide a Federal Emergency Management Agency flood zone map that includes the subject property. Also, if yes, could the solar panel support posts withstand flood inundation? Would the inverters, panels or wiring be damaged as a result of flood inundation? Would only solar panels be located within the 500-year flood zone, or would equipment pads (e.g. inverters and transformers) be located in such areas also?

The floodplains shown on Figure 24 are from the FEMA maps (FEMA Flood Insurance Rate Map No. 09009C (0303J, 0304J, 0311J and 0312J)), with floodway shown in pink (with no portion of the project within this area), 100-year floodplain (1% annual chance flood) shown in gold (with no portion of the Project within this area), and the area between the limits of the 100-year and 500-year floodplain (0.2% annual chance flood) shown in light yellow. As can be seen in Exhibit 2 (an updated Figure 24 that includes an overlay of the proposed Project), no panels are proposed within the mapped floodplain. The only work proposed within mapped floodplain is use of one existing woods road for access that currently extends through the mapped floodplain area; some surface improvements to the existing road are proposed (as further addressed in response to Question 23).

INTERCONNECTION

27. Would any of the power produced be used on-site (identify use), or would it all be fed into the local distribution system? If any of the power would be used on-site, estimate the total on-site load in kilowatts.

The power produced would be fed into the local distribution system, aside from minimal auxiliary loads to operate inverters and other equipment.

28. Page 15 of the Petition notes that, “All of the interconnections combined will require up to 12 new wooden distribution poles on the Project Site.” Approximately how tall would such poles be?

The new poles would be approximately 60 feet high from grade.

29. Would certain solar arrays (or portions of the project) be electrically independent such that one portion could be shut down for maintenance and repair and the remaining portions could remain active and continue to supply power to the grid? For example, per Sheet C-103, Point of Interconnection A (POI-A) is 10 MW, and POI-B is 5 MW. Is POI-C about 5 MW to reach a total of 20 MW? Where would POI-C be located?

Yes, the arrays for the three electrical interconnections would be independent and could be shut down with the remainder of the Project remaining active. With the remainder of the Project remaining active, the location of POI-C is on an existing distribution pole directly across the street from the Project.

30. Would a System Impact Study from the electric distribution utility (e.g. Wallingford Electric Division) be required for the interconnection process? Does the Petitioner have an Interconnection Agreement and with whom? While the proposed project would connect to distribution, would any ISO-NE study or approval be required?

Yes, a System Impact Study will be required for the Project. The Petitioner does not have an Interconnection Agreement in place yet. ISO-NE will need to conduct a regional impact study of the Project in order to determine that the proposed changes will not have a significant adverse effect on the reliability or operating characteristics of the transmission owner’s transmission facilities, the transmission facilities of another transmission owner, or the system of another market participant.

31. Would any upgrades or modifications to Wallingford Substation be required to accommodate the interconnection?

Yes, minor upgrades will need to be made to accommodate the interconnection.

PUBLIC SAFETY

32. Would the solar facility have a protection system to shut the facility down in the event of a fault within the facility or isolate the facility during abnormal grid disturbances or during other power outage events?

The solar facility will have an internal protection system to shut down a portion or the whole solar facility, as appropriate, should a fault occur. The solar facility design will also include the ability to automatically isolate the facility during abnormal grid disturbances or during other power outage events.

33. Would the proposed project comply with the National Electrical Code, the National Electrical Safety Code and any applicable National Fire Protection Association codes and standards?

The Project will be designed to comply with applicable codes and standards from the National Electrical Code (“NEC”), the National Electrical Safety Code and the National Fire Protection Association (“NFPA”) code as required by the local authority having jurisdiction.

34. With regard to fencing:

a. Page 14 of the Petition notes that, “Equipment areas within the Project Site will be entirely enclosed by a 7-foot tall fence...” Does this include solar arrays or only electrical equipment that would be mounted on concrete pads (e.g. equipment depicted on Sheet C-115)?

The fenced area includes all solar arrays and related electrical equipment.

b. On page 14, the Petitioner notes that it is willing to consider a 6-inch gap at the bottom of the fence for wildlife to pass through. Would this be for all fencing? If not, identify those fence sections where the gap would not apply.

The 6-inch gap would be incorporated in all fencing located on the MIRA Property adjacent to wetland areas.

c. Would the fence utilize anti-climb measures?

The Petitioner is not proposing anti-climb design. Anti-climb design measures are not typically incorporated into solar facility design.

35. Would glare from the panels present a problem for any nearby properties? Can plantings be used to buffer the visibility of and/or glare from the solar arrays?

The solar panels are blue/black, and no other colors are available. Any light reflecting off of the solar panels is light that will not be converted by the panels into electricity. Therefore, it is the Petitioner’s desire, and the industry’s goal in general, to make PV panels be as non-reflective as possible. That having been said, there are no 100% non-reflective solar panels on

the market today. The Petitioner anticipates that it will be using panels with a casing on the panels which is approximately 8% reflective. Given the industrial nature of the location and adjacent properties, no plantings are planned at this time. Please also see the response to Interrogatory Number 25.

36. Would glare from the solar arrays have any impact on air navigation? Has a glare analysis been conducted? If not, under what circumstances would a Federal Aviation Administration (“FAA”) glare analysis be required?

Glare would not have an impact on air navigation. The FAA issued a Determination of No Hazard to Air Navigation which is provided in Appendix K of the Petition.

37. Under Appendix K of the Petition, the Petitioner provided three Determinations of No Hazard from the FAA. How were these three locations selected before filing with the FAA?

Because the topography is higher in the northern area of the site, two locations were selected to represent the northeast and northwest corners of the property, respectively, as well as a high point on the landfill top. All other portions of the property are at a lower elevation than the high point selected. A Determination of No Hazard in that location indicates with confidence that similar installations that will be at lower elevations have a similar lack of navigational hazard.

38. Would the proximity of any existing or proposed outbuildings, structures, etc. present a fire safety or other hazard (ex. lightning strike)? Would the proximity of any existing or proposed outbuildings, structures, etc. present a hazard in relation to the electric generating equipment?

Minimum distances and clearances according to NFPA 70 will be followed to ensure a safe, reliable installation.

39. With regard to emergency response:

a. Is outreach and/or training necessary for local emergency responders in the event of a fire or other emergency at the site?

Yes, the Petitioner will coordinate with the local Fire Department so it has knowledge of the issues and risks, as well as to provide training.

b. How would site access be ensured for emergency responders?

Petitioner will provide access to the Fire Department with either a copy of the key lock or a code.

c. **In the event of a brush or electrical fire, how would the Petitioner mitigate potential electric hazards that could be encountered by emergency response personnel?**

The solar facility will comply with the NEC labeling and all safety and fire codes and standards.

40. Could the entire facility be shut down and de-energized in the event of a fire? If so, how? Would there be an emergency key box for first responders to access the site for shutdown purposes, or would they use individual disconnect switches to shut the solar plant down?

NFPA 70/NEC require disconnects and/or fuses throughout the electrical system that take into consideration that each solar panel generates electrical current. There is a single disconnect to each point of interconnection to cut power to and from the grid.

ENVIRONMENTAL

41. Under Appendix A of the Petition, the Carbon Debt Analysis indicates that the proposed project would generate approximately 24,000 MWh of electrical energy per year. Is that AC MWh? Does the Petitioner agree that AC MWh is more appropriate for carbon debt analysis than DC MWh because only AC power can flow into the grid?

Yes, that is AC MWh. The Petitioner agrees with the logic presented by Council.

42. Under Appendix A of the Petition, based on Table 1 (page 2) of the Carbon Debt Analysis, about how long in days or years of operation before proposed project would pass the carbon dioxide “break even” point and potentially result in a net carbon dioxide reduction for the environment?

Assuming for the purposes of analysis that annual generation of the Project would be distributed evenly throughout the year, the proposed Project would pass the “break even” point approximately 133 days after it begins operation.

43. Did the Petitioner conduct a Shade Study Analysis? Would shading present any challenges for the proposed project? If so, how many acres of trees will be removed to mitigate for shading, or would all of the tree clearing be associated with the project footprint itself and not shading?

In design of the Project, the Petitioner considered the impacts of shading and incorporated these concerns into the definition of the Project Area and the placement of solar panels and other Project structures. The Petitioner used strategies to account for shading impacts, such as setting the solar panels back from the Project fence line and using string inverters. The acreage of tree clearing specified in the Petition includes shading impact considerations, and no additional trees are expected to be removed for mitigating shading impacts.

44. Page 14 of the Petition notes that, “The largest installation area requiring tree clearing will require approximately 5.2 acres to be cleared; this will be the largest contiguous area cleared at one time.” Does the Petitioner expect that a clearing area in excess of five acres would be permissible under the DEEP General Permit requirements?

Clearing will be completed with minimal phasing so that all clearing can be completed within the season less sensitive to summer roosting bats that occur within range of the Project. However, it is anticipated that no stumping and related ground disturbance will occur until appropriate best management practices consistent with DEEP General Permit requirements are in place. These require certain measures such as filter socks for work areas that are less than 5 acres, and more substantial measures such as sediment traps for larger areas of disturbance.

45. Would any proposed tree clearing occur within 0.25 miles of a known northern long-eared bat (NLEB) hibernaculum or within 150 feet of a known occupied maternity roost tree?

According to February 1, 2016 Connecticut mapping (Exhibit 4) no known northern long-eared bat maternity roost trees exist within Connecticut. The closest known location of a northern long-eared bat hibernacula is in North Branford, which is well over 0.25 miles from the closest area of clearing, as the closest portion of North Branford is more than 5 miles from the Project site.

46. Page 14 of the Petition notes that, “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.” Would such seasonal restriction be protective of the NLEB? What other, if any, species that may occur at the proposed site is this seasonal restriction intended to protect?

The clearing avoidance season that is protective of the northern long-eared bat pup season is during the months of June and July; therefore, the proposed restriction will be protective of the NLEB. No other species of listed bat was identified by the USFWS or CTDEEP as potentially present. However, due to the proximity of the Quinnipiac River corridor, in an abundance of caution, it seemed prudent to implement seasonal restrictions that would be protective of summer-roosting bats were they to be present.

47. Has the Petitioner considered a seasonal restriction (e.g. February 15th through April 15th) on construction or any other mitigation measures to protect the potential vernal pools?

Seasonal restrictions during the period from February 15 through April 15 have not been proposed, as the current layout avoids impacts to all areas identified as potential vernal pools (PVPs) and the wetlands within which they are located (except for the state-jurisdictional wetland that occurs within a previously-existing wood road). The PVPs will be evaluated in the spring to confirm which of these areas qualify as vernal pools, and several of these areas may be eliminated as such.

48. Why is a Turtle Protection Plan (TPP) included in the Petition when no turtle species are identified by DEEP in the Natural Diversity Database Review Letters dated April 7, 2017 under Appendix N of the Petition? Which, if any, turtle species may occur at the proposed site that the TPP is intended to protect?

No turtle species were identified as potentially present species in the CTDEEP Natural Diversity Database (NDDB) consultation. However, the Project's location near the Quinnipiac River and its floodplains, and observations made during field efforts (Section 6.10 notes that evidence by observation or sign of eastern box, wood, painted, and snapping turtles was noted on the site), indicate that protective measures, in an abundance of caution, would be prudent to prevent the potential for impact.

49. Under Tab O of the Petition, page 4 of the Habitat Assessment, the Petitioner notes that, "Targeted listed insect species were not observed in this (Stripped Barren habitat) location during several seasonally appropriate site-days." Does this include all of the insect species identified by DEEP in the letter dated April 7, 2017? Would any of these insect species be likely to occur outside of the identified 0.83 acre Stripped Barren habitat?

That is correct; none of the listed insect species were observed. These insect species would be unlikely to occur outside of the identified stripped barren habitat due to their preference for sandy soils and related habitat characteristics.

50. Page 41 of the Petition notes that, "Prior to the installation of the panels, the stripped barren habitat will be evaluated to confirm that no listed species are present. To the extent that 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." Does this include both plant and animal/insect species identified in the DEEP Letter dated April 7, 2017?

The intention was to reference the listed plant species low frostweed (*Crocanthemum propinquum*), which is a State Special Concern species. As noted in Section 6.10.2, several specimens of frostweed were observed within the stripped barren habitat, although not definitively identified as low frostweed. If that definitive identification is made, this particular plant species will be transplanted to a suitable habitat.

51. Did the Petitioner seek to minimize wetland crossings when designing the access drives to the solar arrays?

Avoidance and minimization of wetlands was a priority for the Project, including design of the access drives to the solar arrays. For that reason, where existing roads pass between on-site wetlands, the Petitioner has committed that the road will not be widened in order to avoid wetland encroachment. The only area of wetland impact is a portion of an existing wood road that has state-jurisdictional soil characteristics, but is not considered to be federally jurisdictional. In that location, as well, use will be restricted to the pre-existing road width.

52. Is the project located within a DEEP-designated aquifer protection area? Are there any wells on the site or in the vicinity of the site? If so, how would the petitioner protect the wells and/or water quality from construction impacts.

As discussed in Section 6.11, the site is not within a DEEP-designated aquifer protection area; its groundwater is classified by CTDEEP as not suitable for drinking water. There are no drinking water wells on or in the vicinity of the site. The only wells located on the site are for monitoring activities associated with the capped landfill.

53. What effect would runoff from the drip edge of each row of solar panels have on the landfill cap or site drainage patterns? Would channelization below the drip edge be expected? If not, why not?

The edge of the panel is 2 to 3 feet above ground. The stormwater runoff from the arrays will be sheet flow and continuous, rather than concentrated, and the areas beneath the panels will continue to consist of robust permeable vegetation. Therefore, channelization below the drip edge would not be expected. Runoff from the panels will infiltrate into the ground surface, and pre-development drainage patterns will be retained. Regular inspections throughout the Project's operating life will confirm that extraordinary storm events do not result in such impacts; in the unlikely event this occurs, additional measures will be installed as appropriate.

54. Is the landfill equipped with methane vents? If yes, how would the proposed solar panel and associated equipment locations co-exist with the existing venting system?

The landfill does have methane vents that are monitored semi-annually. Any methane vents will be avoided by the solar panels and associated equipment, with a minimum setback distance of 10 feet. Vents are located along the perimeter of the landfill areas and are not anticipated to be a compatibility concern.

55. MIRA controls and monitors the leachate plume from the landfill. Where is the plume located? Where are the controls? Are any solar panels or equipment proposed to be placed over the plume? Would post-mounts or ballast mounts be utilized in the vicinity of the plume?

The leachate plume from the landfill is undergoing monitoring for natural attenuation with no physical control mechanisms. Although shallow groundwater flow is considered to be towards the Quinnipiac River (which would minimally intersect with the MIRA Property), other influences such as the Allnex wells to the south result in the potential for the plume to be drawn across areas in the central and western portion of the MIRA Property. Therefore, panels are proposed in areas that may coincide with the plume.

Ongoing monitoring (since the 1990s from approximately 10 locations surrounding the central and western portion of the MIRA Property) indicates that the concentration of metals in the leachate plume have stabilized and are decreasing. The majority of constituents are below surface water protection criteria established under the Remediation Standard Regulations. Given current information, and unless other conditions warrant, the plan is to use post-mounts in this area. The relative shallow depth of approximately 10 feet and small

“footprint” will not interfere or interact with the leachate plume and its ongoing natural attenuation.

56. Are any impacts to groundwater quality anticipated as a result of solar rack posts to be driven into the ground? If so, how would the Petitioner manage and/or mitigate these impacts?

No impacts to groundwater quality are anticipated as a result of solar rack posts being driven into the ground.

57. Would glare from the solar panels attract birds (ex. Appear as water) and create a collision hazard?

Research and evidence does not attribute significant mortality to birds due to misinterpreting panels for open water bodies. Please also see the responses to Interrogatories 25 and 35 concerning glare.

CONSTRUCTION QUESTIONS

58. If applicable, could tree clearing, grubbing, grading, excavation, filling and dewatering, be performed in stages (e.g. five acres at a time)? Why or why not? (Note: Connecticut Department of Energy and Environmental Protection “DEEP” General Permit for the Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities states that, “Whenever possible, the site shall be phased to avoid the disturbance of over five acres at a time...”)

Yes.

59. Could construction be phased to achieve site stabilization before moving to the next 5-acre area?

Yes.

60. Will grading be required? What is the desired slope within the solar array area? If so, is it possible to install the facility with minimal alteration to existing slopes? If not, could existing vegetation be maintained/managed?

Final civil design will be executed with the goal of eliminating all rough grading, if possible. In the event rough grading cannot be avoided, it will be minimized with efforts to maintain the existing slopes and flow patterns, and maintain existing vegetation. Fine grading for roads, swales and other stormwater features will be installed as indicated on the current drawings, subject to final design.

61. Estimate the amounts of cut and fill in cubic yards for a) access roads and b) general site grading, if applicable.

Less than 200 cubic yards of cut and fill is anticipated for access roads and/or general site grading.

62. How would the posts (that support the racking system) be driven into the ground? In the event that ledge is encountered, what methods would be utilized for installation?

The posts will be driven with a vibratory or hammer type machine. Pile refusals shall be investigated on a case by case basis with several remedial actions possible, including:

- Driving a pile in another location
- Testing for capacity, cutting, and using in place
- Excavating around the pile and pouring a concrete collar
- Extracting the pile, drilling, and re-driving the pile

63. Would the concrete ballasts be poured on-site or would they be delivered to the site pre-cast? If they would be poured on-site, explain how cement trucks would access the site and where the ballasts would be poured.

This is to be determined. If a ballast is poured in place, forms will be erected in the final location on the site with the appropriate equipment completing the final pour. This could be skid loaders with concrete buckets or concrete pumps. Landfill limitations will be taken into account.

64. On page 16 of the Petition, the proposed construction hours and days of the week are provided. Is it possible that Sunday hours might be necessary because of line outage constraints, inclement weather and/or critical path items?

It is possible, but unlikely given the required commercial operation date of the Power Purchase Agreement.

65. Was the Stormwater Pollution Control Plan prepared in accordance with DEEP criteria?

Yes. The Stormwater Pollution Control Plan was prepared in accordance with guidance reflected in the 2004 Connecticut Stormwater Quality Manual for both Water Quality and Recharge; the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control; the September 8, 2017 guidance from CTDEEP on Stormwater Management for Solar Farm Construction Projects; and the existing stormwater permit in effect at the Wallingford Landfill. In addition, the Petitioner met with CTDEEP to specifically discuss stormwater management issues on January 31, 2018.

66. Has the petitioner considered provisions to handle stormwater during/following a rain event during construction? Are temporary swales and/or basins

proposed? Describe the methods to control stormwater flows, including, but not limited to, phasing, basins, etc.

The proposed stormwater measures take into consideration the area of each array section, and have been designed to control stormwater during construction. On days with significant rain activity that could result in excessive rutting, work on the areas of capped landfill will be suspended unless best management practices can be used that would prevent surface disruption.

67. Would the stormwater design be installed in phases to control stormwater flows onto adjacent properties during construction? Explain.

The stormwater control measures will be installed prior to commencement of construction within the area for which they will provide control.

68. What are the impacts of low mow grass on stormwater retention?

Low mow grass will have no impacts on stormwater retention. The soils on the site and basic cover type will remain the same and will, therefore, function in the same manner.

69. Would the (non-landfill portion of the site) be hydro-seeded upon completion of construction activities?

Stabilization methods will be appropriate to time of year, but seeding is planned for stabilization in areas of disturbance. Hydro-seeding can be an efficient manner in which to address larger areas. In smaller areas or for more specialized seed mixes (as addressed in response to Question 78), hand-casting of seed may also be used.

MAINTENANCE QUESTIONS

70. Would the proposed project impact the daily operations of the Town of Wallingford such as the resident waste drop-off area, the bulky waste transfer station at the eastern side of the landfill, or the composting and mulch center on the north side of the landfill as noted on page 10 of the Petition?

No. Access and operations have been planned to avoid interference with existing operations.

71. Page 10 of the Petition notes that, “Debris from the former occupation, including tires and car parts, paint cans, and old furniture, are scattered in several locations throughout the MIRA Property.” To the extent that any of the existing debris is located with the proposed project footprint, would such debris be removed?

Yes.

72. Under Tab F of the Petition – Operation and Maintenance Plan, p. 1, the Petitioner notes that, “Air filter elements of the Project will be inspected and cleaned or replaced, if required.” Are these air filters for the inverters? Explain.

The air filters are on the inverters. The inverters require active cooling due to temperature. The inverters draw ambient air that needs to be filtered. No other equipment has an air filter.

73. Under Tab F of the Petition – Operation and Maintenance Plan, p. 2, the Petitioner notes that snow removal from the solar panels is not proposed. Would snow accumulation on the solar panels affect the output of the facility? Does the projected annual electrical energy output of the facility take into account possible snow cover?

Snow is included in the energy model (see response to Question 17) and does decrease the amount of production. The racking design takes snow depth into consideration to avoid drifting or buildup from the ground to cover solar panels.

74. Has any analysis been conducted to determine structural limits of snow accumulation on the solar panels and steel support structures, assuming heavy, wet snow and or ice? What accumulation of snow could the structures handle? Would the Petitioner clear snow from the panels when it approached the limit?

The racking design includes snow load in accordance with the International Building Code (“IBC”). The solar panels and racking structure strength will exceed the snow load requirements of the IBC and will not require snow clearance from a structural perspective. Snow clearing will be considered from an energy production perspective on a case by case basis.

75. Would any mowing be required under or around the proposed solar panels/modules, and if so, approximately how often would mowing occur? Would the petitioner adhere to any seasonal restrictions on mowing due to the presence of state and federal protected species?

Mowing may be required and will be executed on an as-needed basis, based upon monthly inspections. The solar panel height above ground and seeding mix are intended to minimize the number of times mowing will be required. The Petitioner will adhere to requirements regarding time of year and/or adjustments to blade height.

76. Describe the type and frequency of vegetation management for the site. Include areas inside and outside of the perimeter fence, as well as detention basins and swales if applicable.

Vegetation on the landfill and surrounding areas will be checked monthly. Semi-annual comprehensive site inspections will also be conducted. Mowing will be conducted as required.

77. Page 16 of the Petition notes that, “In that event that panel cleaning is required, it can be accomplished by using a truck with a water tank.” Would this maintenance activity have any impacts to water quality?

No. Clean potable water will be used.

78. Would grass be planted in the solar array areas? If so, what types? How would the grass/vegetative growth be controlled to keep the solar panels clear? Describe the maintenance of the grass/vegetative surface in the fenced solar field area. Page 15 of the Petition notes that pollinator species would be applied to the ground surface following panel installation. Which species and what areas are the Petitioner considering?

Where arrays are installed on the capped landfill, the ground surface impact will be minimized to the greatest extent possible and no additional planting will be necessary. However, where disturbance does occur, these areas will be re-loamed and re-seeded using a seed mixture of meadow grass(es) and white Dutch clover. White Dutch Clover is highly naturalized and provides nectar for cultivated and native bees and butterflies.

Within the MIRA Property, where woody and scrub vegetation will be removed, this will result in exposure of historic seed bank that will be supplemented with herbaceous growth. A fast-growing annual, such as rye, combined with perennial hybrid grasses, such as *Fescue*, are anticipated. In the newly seeded areas, a wildflower meadow seed mix will be used (examples include sheep fescue, foxtail millet, and sweet vernal grass; and wildflowers such as yarrow, ox-eye daisy, chicory, Queen Anne's lace, goldenrods, and asters). This could be supplemented with common milkweed (*Asclepias syriaca*), a desirable food plant that propagates rhizomatically once single plants are established. Seed mixes may be adjusted based on time of year that planting will occur and soil texture.

Respectfully Submitted,
Wallingford Renewable Energy, LLC

By:



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Its Attorneys

Certification

This is to certify that a copy of the foregoing has been mailed via U.S. Mail, first class postage prepaid, and/or electronically mailed on March 2, 2018 to all parties and intervenors of record, as well as all pending parties and intervenors as follows:

Janis Small
Corporation Counsel
Town of Wallingford
45 South Main Street
Wallingford, CT 06492

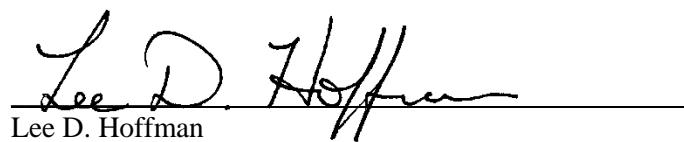

Lee D. Hoffman

Exhibit 1– Permits for Construction and Operation

Permit	Authority	Entity to Hold Permit
Federal		
Exempt Wholesale Generator (EWG) Status	Federal Energy Regulatory Commission (FERC)	Wallingford Renewable Energy LLC
Determination of No Hazard to Air Navigation	Federal Aviation Administration (FAA)	Wallingford Renewable Energy LLC
State		
Declaratory Ruling that a Certificate of Environmental Compatibility and Public Need is not Required	Connecticut Siting Council (CSC)	Wallingford Renewable Energy LLC
Approval of Development and Management Plan	Connecticut Siting Council (CSC)	Wallingford Renewable Energy LLC
General Permit for Discharge of Stormwater and Dewatering Wastewaters Associated with Construction Activities	Connecticut Department of Energy and Environmental Protection (CTDEEP)	Construction contractor or Wallingford Renewable Energy LLC
Authorization to Disrupt Solid Waste Disposal Area	CTDEEP	Wallingford Renewable Energy LLC
Qualification as a RPS Class I Renewable Generation Unit	Connecticut Public Utilities Regulatory Authority (PURA)	Wallingford Renewable Energy LLC
Local		
Town of Wallingford	Building and Electrical Permit	Construction contractor or Wallingford Renewable Energy LLC

Exhibit 2 – Revised Figure 24

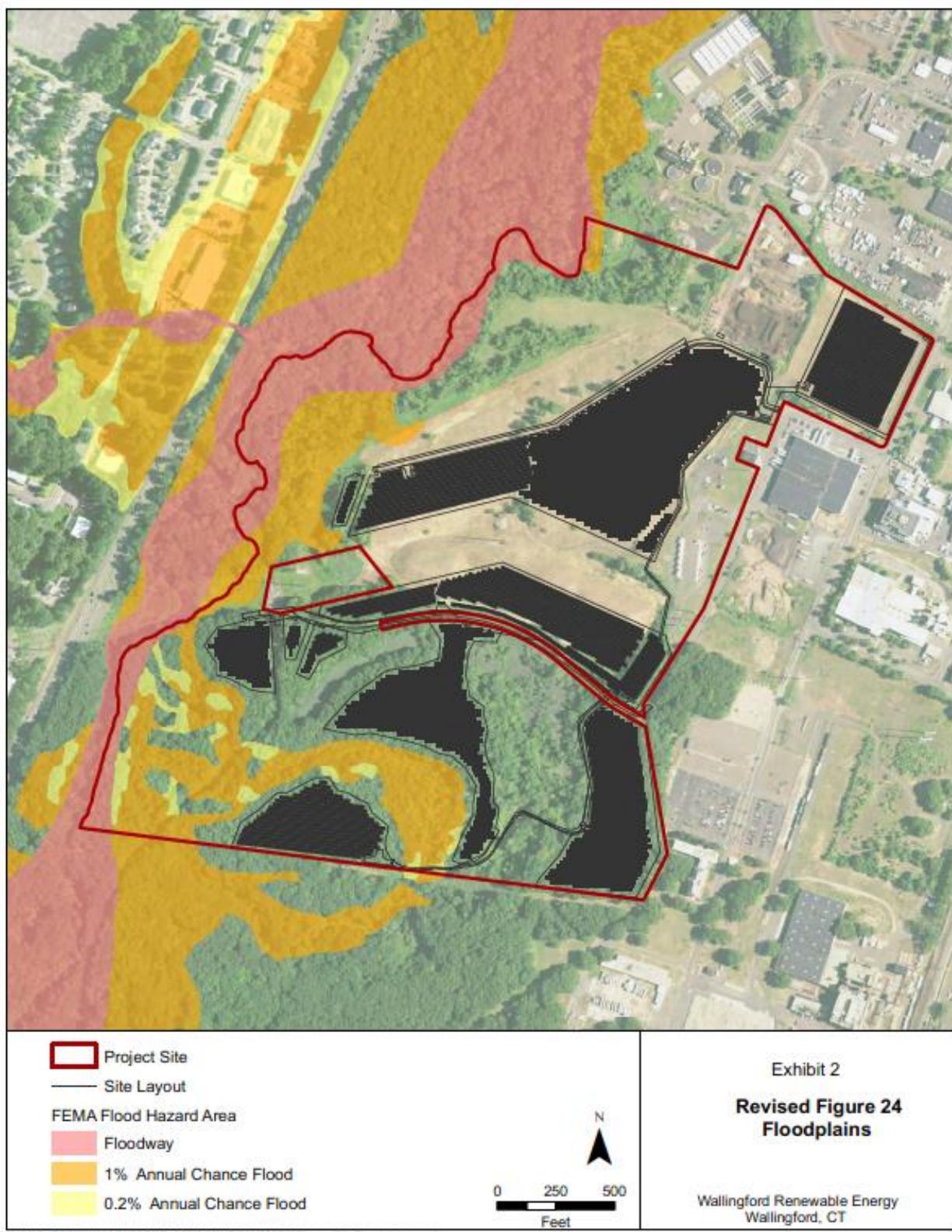


Exhibit 3 – Specification Sheets

Smart String Inverter

SUN2000-95KTL-US-HV-D1



💡 Smart

- 6 MPPTs for versatile adaptions to different layouts
- 12 strings intelligent monitoring and fast trouble-shooting
- Power Line Communication (PLC) supported
- Smart I-V Curve Diagnosis supported

👍 Efficient

- Max. efficiency 99.0%
- CEC efficiency 98.5%
- 800 V output voltage and decrease 75% AC wire loss versus 400 V

🛡 Safe

- DC AFCI compliant to UL 1699B Type I
- Type II surge arresters for both DC and AC
- Residual Current Detection (RCD) protection

☑ Reliable

- Natural cooling technology
- Fuse free design
- Protection rating of NEMA Type 4X

Always Available for Highest Yields

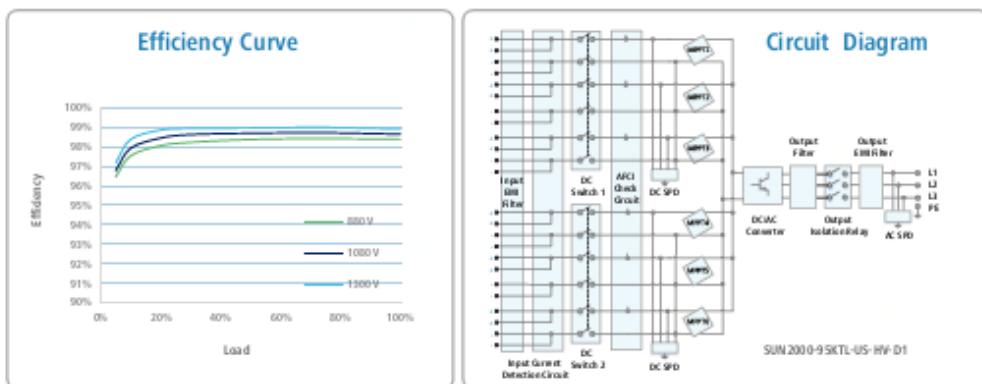
www.huawei.com/solar



Smart String Inverter (SUN2000-95KTL-US-HV-D1)



Technical Specifications		SUN2000-95KTL-US-HV-D1
Max. Efficiency	99.0 %	Efficiency
CEC Efficiency	98.5 %	
Max. Input Voltage	1,500 V	Input
Max. Current per MPPT	22 A	
Max. Short Circuit Current per MPPT	33 A	
Start Voltage	60.0 V	
MPPT Operating Voltage Range	600 V – 1,450 V	
Max. Number of Inputs	12	
Number of MPPT Trackers	6	
Output		
Nominal AC Power ($\cos\phi=1$)	95,000 W@40°C ; 85,000 W@50°C	
Rated Output Voltage	800 Vac, 3 W+PE	
Rated AC Grid Frequency	60 Hz	
Max. Output Current	68.5 A	
Adjustable Power Factor	0.8 L.G., 0.8 L.D.	
Max. Total Harmonic Distortion	< 3%	
Protection		
DC Arc Fault Circuit Interrupter	Yes, compliant to UL 1699B Type I	
Input-side Disconnection Device	Yes	
Anti-islanding Protection	Yes	
AC Overcurrent Protection	Yes	
DC Reverse-Polarity Protection	Yes	
PV-Array String Fault Monitoring	Yes	
DC Surge Arrester	Type II	
AC Surge Arrester	Type II	
DC Insulation Detection	Yes	
Residual Current Detection	Yes	
Communication		
Display	LED Indicators	
RS485	Yes	
USB / Bluetooth + APP	Yes	
Power Line Communication (PLC)	Yes	
General		
Dimensions (W x H x D)	42.3 inch x 23.6 inch x 11.8 inch (1,075 mm x 600 mm x 300 mm)	
Weight	154 lb. (70 kg)	
Operation Temperature Range	-13°F – 140°F (-25°C – 60°C)	
Cooling	Natural Convection	
Max. Operating Altitude	13,123 ft. (4,000 m)	
Relative Humidity	0 – 100%	
DC Connector	MCA	
AC Connector	Waterproof PG Terminal + OT Connector	
Protection Rating	NEMA Type 4X	
Internal Consumption at Night (Sleep Mode)	2.5 W (Sleep Mode)	
Topology	Transformerless	
Standards Compliance		
Safety / EMC	UL 1741, UL 1699B, CSA C22.2 #107.1-01, FCC Part 15	
Grid Code	IEEE 1547, IEEE 1547a, Rule 21, IEC61204-2	



Always Available for Highest Yields

www.huawei.com/solar

The data/configures listed in the current technical state at the time of printing. Subject to technical changes. Errors and omissions reserved. Huawei assumes no liability for mistakes or printing errors. For more information, please visit www.huawei.com.





Q.ANTUM SOLAR MODULE

The new high-performance module **Q.PEAK DUO L-G5.2** is the ideal solution for commercial and utility applications thanks to a combination of its innovative cell technology **Q.ANTUM** and cutting edge cell interconnection. This 1500V IEC/UL solar module with its 6 busbar cell design ensures superior yields with up to 395 Wp while having a very low LCOE. **Q.PEAK DUO L-G5.2** is ideal for ground-mounted solar power plants.



LOW ELECTRICITY GENERATION COSTS

Higher yield per surface area, lower BOS costs, higher power classes, and an efficiency rate of up to 19.9%.



INNOVATIVE ALL-WEATHER TECHNOLOGY

Optimal yields, whatever the weather with excellent low-light and temperature behavior.



ENDURING HIGH PERFORMANCE

Long-term yield security with Anti LID technology, Anti PID Technology¹, Hot-Spot Protect and Traceable Quality Tra.QTM.



EXTREME WEATHER RATING

High-tech aluminum alloy frame, certified for high snow (5400 Pa) and wind loads (2400 Pa) regarding IEC.



A RELIABLE INVESTMENT

Inclusive 12-year product warranty and 25-year linear performance guarantee².



SIMPLER INSTALLATION

Custom cable lengths connect to cableless junction box after mounting, reducing labour effort and minimizing resistive losses³.



¹ APT test conditions according to IEC/TS 62804-1:2015, method B (-1500V, 168h)

² See data sheet on rear for further information.

³ See data sheet on rear for further information. Cable length depends on the product version.

THE IDEAL SOLUTION FOR:



Rooftop arrays on commercial/industrial buildings



Ground-mounted solar power plants

Engineered in Germany

Q CELLS

MECHANICAL SPECIFICATION	
Format	79.3 in x 39.4 in x 1.38 in (including frame) (2015 mm x 1000 mm x 35 mm)
Weight	54.0 lbs (24.5 kg)
Front Cover	0.13 in (3.2 mm) thermally pre-stressed glass with anti-reflection technology
Back Cover	Composite film
Frame	Anodized aluminum
Cell	6 x 24 monocrystalline Q.ANTUM solar half-cells
Junction box	2.40-2.80 in x 1.61-1.97 in x 0.51-0.83 in (61-71 mm x 41-50 mm x 13-21 mm), decentralize, IP67
Cable	4 mm ² Solar cable; one ≥ 15.7 in (400mm) or two ≥ 11.8 in (300mm) cables*
Connector	IP67 or IP68

* depending on product version

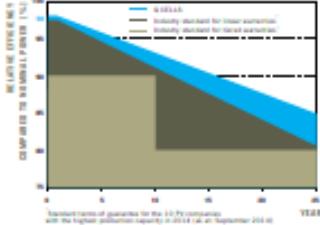
ELECTRICAL CHARACTERISTICS

POWER CLASS		380	385	390	395	
MINIMUM PERFORMANCE AT STANDARD TEST CONDITIONS, STC ¹ (POWER TOLERANCE +5 W / -0 W)						
Power at MPP ²	P _{MPP}	[W]	380	385	390	395
Short Circuit Current ³	I _{SC}	[A]	10.05	10.10	10.14	10.19
Open Circuit Voltage ⁴	V _{OC}	[V]	47.95	48.21	48.48	48.74
Current at MPP ⁵	I _{MPP}	[A]	9.57	9.61	9.66	9.70
Voltage at MPP ⁵	V _{MPP}	[V]	39.71	40.05	40.38	40.71
Efficiency ⁶	η	[%]	≥ 18.9	≥ 19.1	≥ 19.4	19.6
MINIMUM PERFORMANCE AT NORMAL OPERATING CONDITIONS, NOCT ⁷						
Power at MPP ²	P _{MPP}	[W]	281.6	285.3	289.0	292.7
Short Circuit Current ³	I _{SC}	[A]	8.11	8.14	8.18	8.22
Open Circuit Voltage ⁴	V _{OC}	[V]	44.85	45.10	45.35	45.60
Current at MPP ⁵	I _{MPP}	[A]	7.53	7.56	7.60	7.63
Voltage at MPP ⁵	V _{MPP}	[V]	37.41	37.73	38.04	38.35

1000 W/m^2 , 25°C , spectrum AM 1.5-G

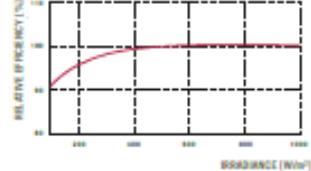
25-YEAR PERFORMANCE WARRANTY PERFORMANCE AT LOW VIBRANCE

Q CELLS PERFORMANCE WARRANTY



At least 98% of nominal power during first year.
Thereafter max. 0.54% degradation per year.
At least 93.1% of nominal power up to 10 years.
At least 85% of nominal power up to 25 years.

All data within measurement tolerances.
Full warranties in accordance with the warranty terms of the Q CELLS sales organization of your respective country.



Typical module performance under low irradiance conditions in comparison to STC conditions (25 °C, 1000 W/m²).

TEMPERATURE COEFFICIENTS

Temperature Coefficient of I_{sc}	α	[%/K]	+0.04	Temperature Coefficient of V_{oc}	β	[%/K]	-0.28
Temperature Coefficient of P_{max}	γ	[%/K]	-0.37	Normal Operating Cell Temperature	NOCT	[°F]	113 ± 5.4 (45 ± 3°C)

PROPERTIES FOR SYSTEM DESIGN

PROPERTIES FOR SYSTEM DESIGN				
Maximum System Voltage V_m	[V]	1500 (IEC) / 1500 (UL)	Safety Class	II
Maximum Series Fuse Rating	[A DC]	20	Fire Rating	C (IEC) / TYPE 1 (UL)
Design load, push (UL) ²	[lbs/in ²]	75 (3600Pa)	Permitted module temperature on continuous duty	-40°F up to +185°F (-40°C up to +85°C)
Design load, pull (UL) ²	[lbs/in ²]	33 (1600Pa)	see installation manual	

QUALIFICATIONS AND CERTIFICATES

UL 1703; CE-compliant;



PACKAGING INFORMATION

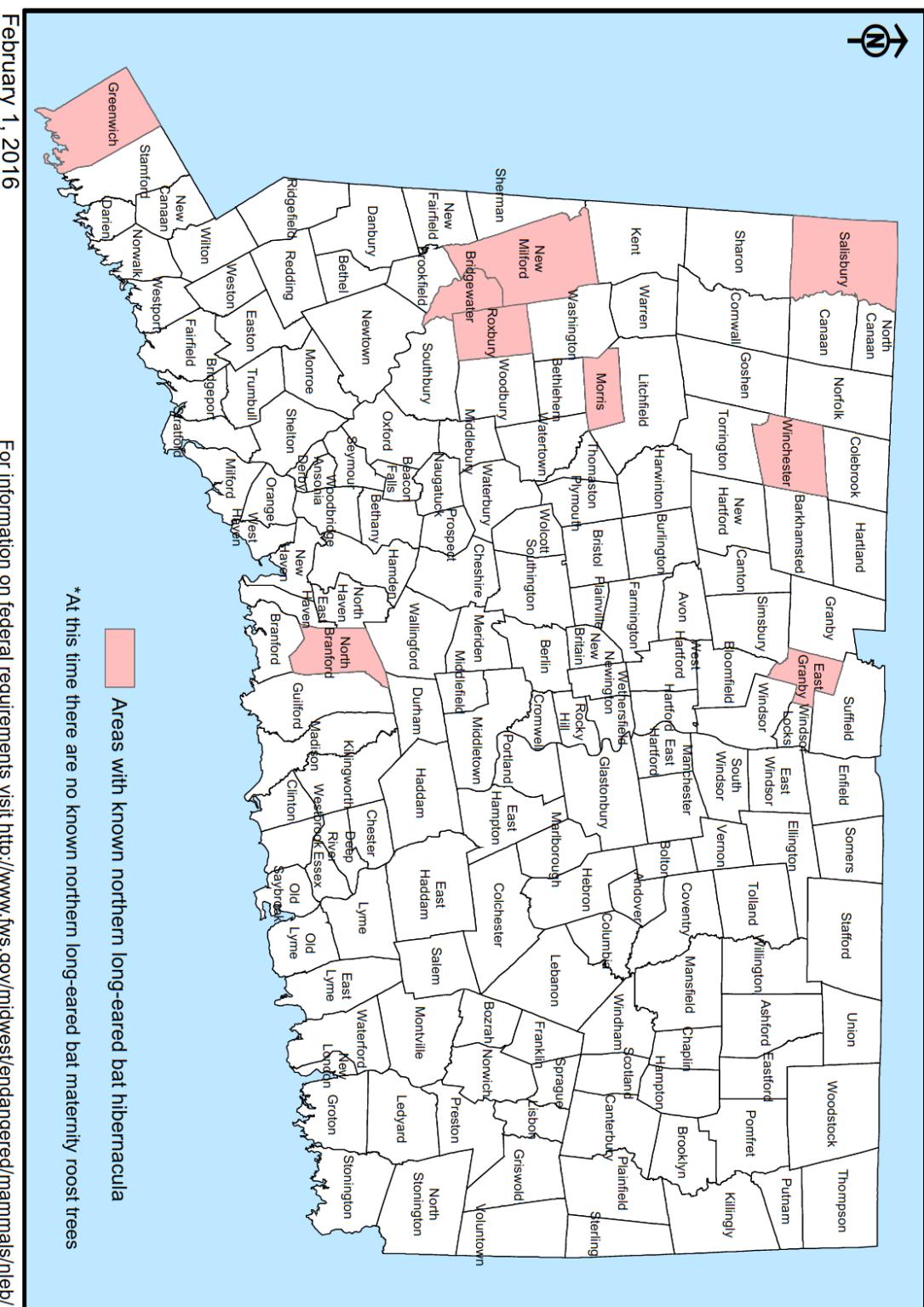
Number of Modules per Pallet	29
Number of Pallets per 53' Trailer	26
Number of Pallets per 40' High Cube Container	22
Pallet Dimensions (L x W x H)	81.9 in x 45.3 in x 46.9 in (2080mm x 1150mm x 1190mm)
Pallet Weight	1699 lbs (771 kg)

NOTE: Installation instructions must be followed. See the installation and operating manual or contact our technical service department for further information on approved installation and use.

Hanwha Q CELLS America Inc.
300 Spectrum Center Drive, Suite 1250, Irvine, CA 92618, USA | **TEL** +1 949 748 59 96 | **EMAIL** inquiry@us.q-cells.com | **WEB** www.q-cells.us

Exhibit 4 – Mapping of bat hibernacula

Northern long-eared bat areas of concern in Connecticut to assist with Federal Endangered Species Act Compliance



February 1, 2016