

**STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL**

CANDLEWOOD SOLAR, LLC PETITION	:	PETITION NO. 1312
FOR DECLARATORY RULING THAT NO	:	
CERTIFICATE OF ENVIRONMENTAL	:	
COMPATIBILITY AND PUBLIC NEED	:	
IS REQUIRED FOR A 20 MEGAWATT	:	
AC SOLAR PHOTOVOLTAIC ELECTRIC	:	
GENERATING FACILITY IN NEW MILFORD	:	
CONNECTICUT	:	September 19, 2017

**PREFILED WRITTEN TESTIMONY OF
JOEL LINDSAY
AMERESCO, INC.**

A. INTRODUCTION

Q. Please state your name, title, and business address.

A. Joel Lindsay
Director – Solar PV Project Development
Ameresco, Inc.
111 Speen Street
Framingham, MA 01701

Q. Please describe your current responsibilities and professional experience.

A. My current responsibilities include all aspects of developing solar PV projects in the Northeast US, including proposals/bids, contract negotiation, permitting, design, construction and operation. I have over 25 years of experience as a design engineer, project manager, and project developer for environmental and energy infrastructure improvement and development projects. I am a registered Professional Engineer (Environmental) in Massachusetts. I have been directly

involved and responsible for development and implementation of over 20 MW of solar projects in the Northeast US over the past 10 years.

Q. What has been your involvement in the Candlewood Solar Project?

A. I have primary responsibility for all development aspects of the project, and I have been involved from the initial proposal that was submitted under the Tri-State Clean Energy RFP process in October 2015. I have since led Ameresco's efforts to develop and permit the project, including extensive work with the Town of New Milford to explain the project and to negotiate a PILOT agreement.

Q. Regarding the responses to Council's interrogatories to the Candlewood Solar Project, numbers 1-79, did you jointly prepare those responses?

A. Yes.

Q. Do you have any corrections, modifications, or additions to those interrogatory responses that you wish to bring to the Council's attention?

A. No.

Q. And do you adopt the Candlewood Solar Project's responses to those interrogatories numbered 1-79 as your sworn testimony in this proceeding?

A. Yes.

Q. Regarding the responses to the Town of New Milford's interrogatories to the Candlewood Solar Project, numbers 1-35, did you jointly prepare those responses?

A. Yes.

Q. Do you have any corrections, modifications, or additions to those interrogatory responses that you wish to bring to the Council's attention?

A. No.

Q. And do you adopt the Candlewood Solar Project’s responses to those interrogatories numbered 1-35 as your sworn testimony in this proceeding?

A. Yes.

Q. What is the purpose of your testimony?

A. The purpose of my testimony is to provide a high-level summary of the Candlewood Solar Project (“Project”). I will cover the following topics:

1. Candlewood Solar Project Description (i.e., Solar Array and Interconnection)
2. Benefits of the Project to the Town of New Milford
3. Benefits of the Project to the Connecticut.
4. Description of the Site
5. Description of the currently allowed land uses at the Site
6. Description of the PILOT with the Town of New Milford
7. Construction of the Project
8. Safety and Security
9. Electric and Magnetic Fields
10. Municipal and Agency Consultations and Outreach
11. Statutory Compliance
12. Outstanding Items
13. Concluding Remarks

B. PROJECT SPECIFIC TESTIMONY

1. CANDLEWOOD SOLAR PROJECT DESCRIPTION

Q. Please describe the Solar Array.

A. The Candlewood Solar Project is located on the southern flank of Candlewood Mountain on a combination of open field and wooded areas, less

than one mile from the Rocky River substation in New Milford, CT. The Rocky River substation is a PTF node on the NE-ISO grid and connects to a 345 kV trunk line of the grid transmission system. The Project will provide up to 20 MW of AC power directly to the grid via the interconnection at the Rocky River substation.

The Solar Array (“Facility”) consists of a 26.5 MW DC (20 MW AC) solar photovoltaic array and associated balance of system components, including transformers, inverters, combiners, wiring, and medium voltage conductors to connect the project to the NE ISO grid. The solar array itself will consist of approximately 75,000 individual solar panels mounted on steel racking supports. The racking system will be anchored to the ground by vertical screws installed 4-6 feet into the underlying soil/rock. The panels themselves will be oriented to face directly south at a tilt angle of 15 degrees. The solar panels will be assembled to the racking in a “landscape” orientation, with the top height of the highest panel being at approximately 9-10 feet above ground, and the bottom edge of the lowest panel approximately 2-3 feet above ground. The entire leased area of the project, including underneath and around the solar panels, will be natural soil planted with appropriate grass species. The solar array and interconnection route are separated from abutting properties by elevation and a significant tree buffer.

The Facility will include eight (8) utility scale inverters. Each inverter will be nameplate rated at 2,500 kw. The inverters will convert the DC power from the panels to AC power. The total AC power of the facility is 20 MW. The AC power

will be fed to 8 transformers, which will step the voltage up from 1,500 V to 13,800 V and feed the power to the conductors which will run from the Facility to the Rocky River substation. The inverters and transformers will be located on concrete pads as shown on the Detailed Site Plan which was provided previously in our Petition.

Once constructed, the Facility will be surrounded by a 7-foot high chain link security fence, as required by electrical code. There will be one main gate entrance to the solar array. The Facility will be accessed during construction and operation via an unpaved access road that connects to Candlewood Mountain Road. Improvements will be made to this access road to make it suitable for construction traffic and to mitigate any erosion issues. During operation, the road will remain in use for visits by operations personnel, which will be quarterly to bi-annual.

Q. Please describe the interconnection for the Project

A. The Facility will be interconnected directly to the Rocky River substation via a dedicated circuit. The exact specifications of interconnection conductors and associated protection circuitry will be determined after obtaining the results of the distribution and transmission level impact studies that are currently underway by Eversource Energy. These studies are near completion and reports are expected by the end of September 2017.

The dedicated circuit will run east from the solar array and down the east side of Candlewood Mountain, onto the FirstLight property that contains the Candlewood Lake dam. The circuit will run north of the dam and along an existing paved service road towards Route 7, then along an existing fiber optic line corridor before terminating at Route 7 across from the FirstLight power station and Rocky River substation. Where the circuit runs through wooded area, a 30-foot wide corridor will be cleared. Only limited clearing/trimming will be necessary along the service road or along the fiber optic line corridor. The interconnection lines will not be visible from Candlewood Lake, based on surrounding tree height and the elevation of the interconnection route.

2. BENEFITS OF THE PROJECT TO THE TOWN OF NEW MILFORD

Q. Does the Project benefit the Town of Milford?

A. Yes

Q. Please explain?

A. The project will provide economic and other benefits to the Town of New Milford as follows:

- **Increased Tax Revenues** - Candlewood Solar has worked closely with the Town of New Milford to negotiate and execute Payment in Lieu of Taxes (PILOT) agreement that provides for payment of over \$2.7 M in taxes for the system over 20 years. This is an approximately five-fold increase in the tax revenue currently being generated by the property where the Project is sited, and will be a significant economic benefit to Town finances. In addition, the

solar facility will require no additional services or infrastructure from the Town during either construction or operation.

- **Preservation from More Intense Development** - The parcel hosting the solar array is currently zoned as a Major Planned Residential Development District (MPRDD) – the only such zoned parcel in the Town of New Milford. This zoning designation allows for the building of a large scale, high-density residential development of up to hundreds of units, buildings up to 5 stories high, and paved parking and surface roads. The solar development is not permanent, and involves minimal installation of impervious surfaces and project heights no more than 10 feet. The PILOT also has a provision for voluntary change by the land owner of the zoning from MPRDD to R-80, which significantly reduces the potential scale and density of potential residential development of the parcel after the solar array is removed.
- **Local Jobs** - The construction of the Project will likely take approximately 6-9 months, and will generate up to 250 construction jobs. These jobs will potentially be in the areas of surveying, system installation, landscaping, site work and utility work. As part of the PILOT agreement, the Petitioner agreed to make commercially reasonable efforts to give preference to local contractors, subcontractors, and workers to install, construct, and maintain the Facility. The Petitioner will also provide a written report to the Town prior to the construction outlining the percentage of work for local contractors and workers. The report will be updated on the commercial operation date to

show the Petitioner's actual usage of local contractors, subcontractors and workers during the installation and construction of the Project.

3. **BENEFITS OF THE PROJECT TO THE STATE OF CONNECTICUT**

Q. Does the Project benefit Connecticut?

A. Yes.

Q. Please explain.

A. The positive environmental attributes of the project benefit the State of Connecticut and the New England Region. The project will improve State and Regional air and water quality as follows:

- **Emission free power and CO2 Offset** - The Project will generate approximately 34 million kilowatt hours per year of clean, emission free electricity that will be fed directly into the NE ISO grid. This generated power will offset the equivalent of over 25 million pounds of coal being burned for electricity production. Alternatively, it is equivalent to the sequestering of CO2 by over 22,000 acres of forest land.
- **Reduced Need for Fossil fuel-based Power generation** - The Project will contribute to reducing the need to add additional fossil fuel generation capacity to the NE ISO grid to meet electricity demand in the future, thereby further reducing the region's dependence on fossil fuels, and improving air and water quality in the state of Connecticut and the New England region.
- **Benefits to the NE-ISO Grid in Connecticut** - The Project will provide benefits to the ISO-NE grid in Connecticut by providing deliveries into the

ISO-NE forward capacity market, thus standing ready to provide energy during constrained periods in the western CT region. The ability to deliver energy during constraints is due to its location and interconnection to the 345 KV high voltage transmission line.

4. DESCRIPTION OF THE SITE

Q. Please describe the site where the Project will be located?

A. The Project will be located on property in New Milford, CT on the southern flank of Candlewood Mountain and to the east of Candlewood Mountain (please reference the Petition, Attachments 1, 2 and 3, Overall and Detailed Site Plans). The site is a combination of wooded area and open fields. The property which hosts the Facility and the westernmost portion of the interconnection route is parcel 26/67.1. The closest paved road to the Facility is Candlewood Mountain Road, which is to the southwest of parcel 26/67/.1. A portion of this property borders and has frontage on Candlewood Mountain Road. This is where the access point for construction traffic will be located, on an existing unpaved road that runs up to the location of the Facility. To the north and east of the site is Route 7 (Kent Road), which includes some commercial/industrial properties and residential properties, along with the property owned by FirstLight, which includes the dam on Candlewood Lake, the associated roads and infrastructure, and the penstock which runs down under Route 7 to the FirstLight powerhouse and the Rocky River substation. The substation, which is the planned point of

interconnection for the Project, is approximately 5,000 feet from the property and the location of the Facility.

Parcel 26/67.1 is partially wooded with several large hayfields. A large portion of this parcel, including the area where the Facility is to be sited, is elevated above the level of fields and residences on Candlewood Mountain Road. There are wetlands and a vernal pool located on the eastern portion of the property, outside of and to the east and north of the planned location of the Facility. In addition, there are several wetlands adjacent to the interconnection route which runs across the FirstLight property to Route 7. All the wetland features are described in more detail in the Environment Assessment that was previously submitted with our Petition.

The properties that host the facility and the interconnection route were selected based on several factors as follows:

- They are located within close physical proximity to the Rocky River substation, allowing cost-effective interconnection to the ISO-NE high voltage, 345 KV transmission line via the Rocky River substation.
- The EDCs selected the Project because it will provide deliveries into the ISO-NE forward capacity market, thus standing ready to provide energy during constrained periods. The ability to deliver energy during constraints is due to its location and interconnection to the 345 KV high voltage transmission line.

- The property hosting the Facility is configured such that the Facility can be sited within a continuous tree buffer, and is also elevated above the surrounding area, making the project relatively unobtrusive visually to the surrounding area and residences.
- The site contains no prime farmland. Approximately 68 acres of clearing of second growth trees will be necessary for the solar array, but these wooded areas can be re-established at the end of the 20-year project.
- Ameresco’s civil, environmental, and electrical engineers have carefully surveyed the site and designed the solar array to avoid wetlands.

5. DESCRIPTION OF THE CURRENTLY ALLOWED LAND USES AT THE SITE

Q. Please describe the land uses currently allowed at the Site.

A. The parcel is zoned as a Major Planned Residential Development District (MPRDD). This zoning district was established for this parcel approximately 12 years ago to allow for the potential development of a large scale, high-density, multi-story residential complex. Plans for an over 500-unit active adult residential development (called “Dunham Farms”) were submitted to the Town of New Milford in 2007, but approval was never granted by the Town and the project did not go forward. The MPRDD zoning designation remains in place, and therefore a large scale residential development could still be constructed at the site.

Q. Are there any benefits of the Solar Array to the Site versus the currently allowed land uses at the Site?

A. Yes.

Q. Please explain.

A. As opposed to a large multi-story residential development with paved roads and parking, the solar array will create only a very small amount of additional impervious area at the Site. The only impervious structures will be 8-10 concrete pads for the inverters/transformers, each approximately 10x20 feet in size. The entire area of the solar array will be grass field and there will be no paved areas. The solar array will require no Town services and will be largely invisible to the surrounding area, as the maximum height of the array is approximately 9 feet. In contrast, a large scale residential complex would be allowed to be up to 5 stories (approximately 50 feet) in height.

Importantly, the solar array is not a permanent structure. The array will be removed and decommissioned at the end of its useful life (20-30 Years) and the area occupied by the array can remain as meadow or revert to forest. The PILOT agreement executed with the Town also has a provision for voluntary change of the zoning of the solar parcel to R-80, which is much lower density (approximately 2 acre) residential zoning than the current MPRDD zoning.

6. DESCRIPTION OF THE PILOT WITH THE TOWN OF NEW MILFORD

Q. Please describe the PILOT Agreement negotiated between the Project and the Town of New Milford.

A. The PILOT Agreement was negotiated between the Town of New Milford and Candlewood Solar LLC between November 2016 and February 2017. The PILOT provides for a structured tax payment over twenty years of the operation of the solar array, with an option to renew for 5 years at the end of the 20-year term. The total amount of payment to the Town over 20 years is over \$2.7M. The PILOT also includes numerous provisions that provide the Town with additional protections regarding the construction and operation of the project. These include the requirement for issuance of a total of \$325,000 in surety bonds during construction to cover potential storm water drainage and erosion impacts, local infrastructure impacts, and impacts from visibility of the array to nearby properties. The PILOT also requires that Candlewood hire a licensed forester to provide guidance on proper logging operations, and provide decommissioning assurance in a form acceptable to the Siting Council and the Town.

Lastly, the PILOT requires that Candlewood make commercially reasonable efforts to hire local contractors and construction personnel for the construction work, and to report to the Town on the amount of local labor and contractors that are hired.

Q. Does the PILOT provide any benefits to the Town of New Milford?

A. Yes.

Q. Please explain.

A. The PILOT provides the following tangible economic benefits:

- \$2.7M in guaranteed revenue over 20 years, which is 5 times the amount of tax revenue that would be generated by the property as it exists now.
- Commitment by Candlewood Solar to make commercially reasonable efforts to hire local contractors for work on the project.

See answer above for additional environmental/infrastructure protections provided by the PILOT.

7. CONSTRUCTION OF THE PROJECT

Q. Please describe the construction process for the Project.

A. The general construction sequence will be as follows:

- **Site Preparation** – the access road to the site from Candlewood Mountain Road will be improved with installation of erosion control measures. Wooded areas will be cleared and necessary grading will be conducted, along with installation of temporary storm water and erosion control measures
- **Major Equipment Delivery** – during site preparation, racking and panel deliveries to the site will be made.
- **Racking Installation** - racks will be installed starting at the northern portion of the array and working south.
- **Panel installation** – panel installation will follow racking, also working north to south
- **Balance of System (BOS)** – trenching, wiring and installation of inverters and transformers, fencing
- **Interconnection** – the interconnection work will proceed as soon as site preparation is completed and will be completed in parallel to array construction

Overall the construction at the site will take 6-9 months, excluding winter down time. The site preparation work will occur in the first 2-3 months primarily, and this will include any light grading and preparation of erosion and storm water control features, improvements to the access road, and readying of pads for the inverters and transformers. The remainder of the construction time will be taken with installation of the racks, panels and wiring, as well as transformers and

inverters. The permanent security fence will be completed at the end of the construction phase.

Q. Will the construction process have any adverse effects on the surrounding area?

A. No.

Q. Please explain.

A. Construction of the system will be conducted in an area located at least 400 feet away from the nearest residence, and enclosed by existing wooded areas. The following measures will be implemented to minimize construction impacts:

- Stormwater and erosion control measures will be implemented in accordance with State of Connecticut requirements to fully mitigate construction impacts on stormwater drainage and erosion around the site. These storm water and erosion control measures will be maintained during operation of the Facility.
- Noise impacts will be minimal due to the physical distance of the site from residential receptors. The project will comply with standard work hours mandated by the Town of New Milford.
- Traffic impacts on Candlewood Mountain Road can be minimized by grouping and consolidation of major equipment deliveries (panels, racks, inverters). Measures such as installation of a tracking pad will be taken to minimize tracking of mud from construction vehicles onto Candlewood Mountain Road. Outside of equipment delivery construction vehicle traffic will be minimal. Personnel vehicles can be parked at the project site in areas not occupied by the solar facility, and if necessary, in the open field on Candlewood Mountain Road.

All construction activities will be timed and sequenced to allow for implementation of mitigative and protective measures required for sensitive

environmental areas and protected species which are found or presumed to be potentially present. This mitigation could include seasonal restrictions on tree clearing and other site work, along with other actions during the work to avoid or mitigate impacts to certain species. The most recent correspondence from DEEP has already outlined certain requirements for the protection of bats and wood and box turtles. Additional requirements will be determined based on pending findings of wildlife and cultural resource surveys in progress. No construction is planned within wetland areas, other than a small amount of tree clearing/trimming in less than 2,500 sf of wetland along the interconnection route.

8. SAFETY AND SECURITY

Q. Please describe the safety and security measures to be deployed at the Site.

A. The solar array will be surrounded by a 7-foot high chain link security fence, and there will be one locked gated entrance to the Facility. All electrical equipment is fully enclosed and locked. Local fire and emergency personnel will be trained on system basics and how to shut the system down in emergencies, as well as provided contact information for operations personnel.

Q. Will the Project pose any dangers to the surrounding area?

A. No.

Q. Please explain.

A. The Project will be surrounded by a security fence and located in a remote area elevated from the surrounding area and surrounded by the tree buffer. The Project will emit minimal noise during the day and will be silent at night. There are no moving parts or exposed electrical components or wires.

Q. Will the Project pose any hazard to local aviation?

A. No.

Q. Please explain.

A. Candlewood Solar has made 7460 Filings to FAA for over 40 points along the perimeter of the solar array and along the alignment of the interconnection route. Based on these filings, FAA has determined that the Facility and associated interconnection does not pose a hazard to air navigation. Determination of No Hazard to Air Navigation letters were provided in the Project's Pre-Hearing Submission as an Exhibit.

9. ELECTRIC AND MAGNETIC FIELDS

Q. Will the Project create any electric and magnetic fields in the area?

A. Yes. The transformers at the Facility and the distribution line connected to the Project may produce some electric and magnetic fields.

Q. Are these electric and magnetic fields dangerous to people and animals?

A. No. They produce no more significant electromagnetic field than typical distribution wires on poles that run throughout the Town of New Milford.

10. MUNICIPAL AND AGENCY CONSULTATIONS AND OUTREACH

Q. Did the Project do any municipal and agency consultations and outreach regarding the Project?

A. Yes.

Q. Please explain.

A. For the past 18 months, the Petitioner and the site developer, New Milford Clean Power, have worked closely with Mayor Gronbach of New Milford, and

numerous town boards and commissions to publicize the Project, solicit input and feedback on project elements, and develop a PILOT agreement with the town.

The results of this collaboration are as follows:

- Execution of a Payment in Lieu of Taxes (“PILOT”) Agreement with the town of New Milford that will generate over \$2.7 M in revenue for the Town over 20 years. The PILOT is described further under another question.
- The Petitioner has obtained better understanding of the public’s concerns with regard to visual impacts from the Facility and impacts during construction. The Facility will be surrounded by a significant tree buffer, and with its elevated location relative to the surrounding area, will have very low to no visibility to surrounding residents and areas. Measures to mitigate construction impacts are described elsewhere in this testimony.
- Collaboration with the New Milford Forest and Farmland Preservation Committee (“NMFFPC”) to address their concerns. The NMFFPC issued a memorandum on December 11, 2016 (Attachment 8) listing requested actions for the project development team to consider. These actions will be considered and implemented as appropriate in coordination with the NMFFPC and the Siting Council.
- New Milford Clean Power, LLC, prospective land owner has had initial discussions with local non-profit conservation groups to establish a permanent conservation easement for a substantial segment of parcel 26/67.1 not being used for solar.

- In a public forum conducted by the project development team on December 7, 2016, and in presentations to the New Milford Town Council on January 9, 2017 and February 13, 2017, the project and its impacts were described and public comment was received. An initial simulation of the view of the project from Candlewood Mountain road was provided in the January 9, 2017 public hearing. A detailed view shed analysis has been conducted and was included in the Petition.

We have also submitted initial SHPO and NDDB inquiries regarding the project (in April 2017), the cultural resource and threatened species surveys at the site are in process and are described further in separate testimony. In July and August 2017 we met multiple times with DEEP personnel to review the project and potential environmental and storm water drainage impacts and design mitigation measures. Consultation with DEEP is on-going in these areas as the project design is refined.

11. STATUTORY COMPLIANCE

Q. To the best of your knowledge, has the Project complied with all state statutes regarding this Project and regarding this Petition?

A. Yes.

12. OUTSTANDING ITEMS

Q. Are there any outstanding items that the Project will need to submit in this proceeding?

A. Yes.

Q. Please explain.

A. The following items are in process and will require follow up submissions after September 19, 2017:

- Phase 1B Cultural Resources Survey Report
- Threatened Species Assessment Report
- Final Permit Set of Civil Design Plans

C. CONCLUSION

13. CONCLUDING REMARKS

Q. Does this conclude your prefiled testimony?

A. Yes.

CERTIFICATION

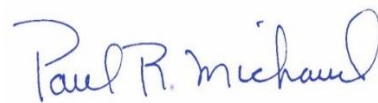
I hereby certify that on September 19, 2017, the foregoing was delivered by electronic mail and regular mail, postage prepaid, in accordance with § 16-50j-12 of the Regulations of Connecticut State Agencies, to all parties and intervenors of record, as follows:

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