

STATE OF CONNECTICUT
CONNECTICUT SITING COUNCIL

IN RE: :

DISTRIBUTED SOLAR OPERATIONS, LLC : PETITION NO. 1462
AND IKEA PROPERTY, INC. NOTICE OF :
ELECTION TO WAIVE EXCLUSION FROM :
CONNECTICUT SITING COUNCIL :
JURISDICTION, PURSUANT TO :
CONNECTICUT GENERAL STATUTES §16- :
50K(E), AND PETITION FOR A :
DECLARATORY RULING, PURSUANT TO :
CONNECTICUT GENERAL STATUTES §4- :
176 AND §16-50K, FOR THE PROPOSED :
CONSTRUCTION, MAINTENANCE AND :
OPERATION OF A 0.90-MEGAWATT AC :
SOLAR PHOTOVOLTAIC ELECTRIC :
GENERATING FACILITY LOCATED AT :
IKEA, 450 SARGENT DRIVE, NEW HAVEN, :
CONNECTICUT, AND ASSOCIATED :
ELECTRICAL INTERCONNECTION : SEPTEMBER 30, 2021

**RESPONSES OF DISTRIBUTED SOLAR OPERATIONS, LLC/IKEA PROPERTY INC.
TO CONNECTICUT SITING COUNCIL INTERROGATORIES**

On September 16, 2021, Siting Council requested answers to questions relating to Petition No. 1462. Below are the responses from Distributed Solar Operations, LLC and IKEA Property, Inc. (collectively the “Petitioner”).

Project Development

Question No. 1

What is the estimated cost of the Project?

Response

The Petitioner estimates the cost of the project to be approximately \$4,400,000.

Energy Production

Question No. 2

Is the project being designed to accommodate a future potential battery energy storage system? If so, where would it be located?

Response

No, a battery storage component is not contemplated.

Question No. 3

What is the anticipated capacity factor of the project? Would the capacity of the system decline over time? If so, estimate annual losses.

Response

The anticipated capacity factor of the project is 23%. This percentage will degrade over time at a maximum rate of 0.54% per year.

Question No. 4

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 project capacity factor 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, snow and ice accumulation, hail, dust or pollen and at what intervals?

Response

So called “soiling losses” have been accounted for in our energy production simulations. In the northeast United States, rainfall levels are significant enough to eliminate the need to clean solar photovoltaic (“PV”) modules. Snow accumulation that occurs on module surfaces will

melt in place and be captured by the gutter system, and discharge via downspouts at grade. No sliding or shedding of snow to the ground will occur, due to the flat roof design of the canopy solar panels and the orientation of the modules.

Question No. 5

Would prey shells from shorebirds damage or otherwise affect the Project? How can such damage be prevented?

Response

Shorebird activity, which might include using the panels as a surface for opening shellfish, is not anticipated to result in damage that would have any significant effect on the Project. The glass covering the solar panels is designed to withstand hail with a diameter of one inch. Utilizing that standard as a reasonable proxy for dropped shellfish, any damage across the solar array would be sporadic and unlikely to affect near term production in any measurable or significant way. Should damage occur from shorebird activity, it would be addressed through maintenance or replacement in the same manner as any other source of damage.

Question No. 6

What is the estimated peak load of the IKEA store (in MW) relative to the proposed 0.9 MW AC peak output of the proposed solar facility? Would all of the energy output of the facility be used at the IKEA store?

Response

IKEA maintains an existing solar PV and Fuel Cell facility with a combined output of approximately 1,095 kW. The existing IKEA solar/fuel cell facility together with the proposed canopy PV system has been designed to be roughly equivalent to the peak load of the IKEA store. At times, the output of the solar/fuel cell and canopy solar equipment will exceed the

consumption of the store. The site will be equipped with a “Net Energy Meter” provided by United Illuminating Company, which will reconcile exported energy with imported energy.

Question No. 7

Is there an already existing solar facility located on top of the IKEA store?

Approximately how many MW does the existing facility contribute to the peak load of the IKEA store?

Response

See Response No. 6 above.

Question No. 8

Referencing Drawing A-100, two PV systems are identified. Will these systems operate independently such that if an interconnection failure or maintenance shut down occurs at one, the other will continue to operate?

Response

The two canopy spans shown in Drawing A-100 are both part of the project described in the Petition and will have a single, shared interconnection. Each string of panels connected to an inverter can disconnect independent of the other inverter strings if necessary due to failure or as required for maintenance purposes. If there is an interconnection failure or maintenance shut down, the entire canopy solar facility would be taken offline. The canopy facility will operate independently from the existing renewable energy system on the roof of the IKEA building.

Question No. 9

Why is a tilt of 5 degrees proposed for the panel arrays?

Response

Due to the nature of the array type (dual slope long-span) the arrays have a 5-degree tilt to

enhance system performance, power density & snow and other precipitation shedding.

Site Components and Solar Equipment

Question No. 10

What is the design wind speed of the solar panel mounts? How are the panels adhered to the mounts? What prevents the solar panels from separating from the racking or the foundation during high winds?

Response

The design wind speed for the solar panels is 125 mph. The panels themselves will bolt directly to structural framing using four bolts per panel. The facility will be designed by a Connecticut-registered Professional Engineer and will comply with local and state building code requirements.

Question No. 11

Are the solar panels attached to a steel roof? If so, is the steel roof pitched for sheet drainage or is runoff directed to drainpipes?

Response

The solar PV panels are, in fact, the roof of the canopy and each will be bolted to structural framing. Stormwater runoff will be captured by a gutter system and directed to downspouts.

Question No. 12

Submit a photograph/simulation or drawing that provides detail of the proposed canopy design.

Response

Photographs of several canopy systems developed by the Petitioner are included in

Attachment 1.

Interconnection

Question No. 13

Would any new overhead or underground connections to the local distribution system be required?

Response

No. The facility will interconnect to the IKEA building in the interior electrical room and will be interconnected to the local distribution system through the existing IKEA “Main Service A” connection.

Question No. 14

Should the Eversource system experience an outage, will the PV systems still be operational to provide power to the IKEA store?

Response

No.

Public Safety

Question No. 15

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?

Response

Yes. The system’s inverters are programmed to monitor grid voltage, ground faults, as well as PV array imbalances and will ultimately shutdown the facility in the case of any unsafe irregularities. Additional protection is provided between the inverters and the utility

interconnection by way of the circuit breakers and main disconnects to protect the AC circuits.

Question No. 16

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

Response

Yes.

Question No. 17

Would the proposed structural design and loading associated with the proposed canopy solar installations comply with the Connecticut State Building Code (or other codes) as applicable?

Response

Yes.

Question No. 18

Would the Petitioner conduct outreach/training to local emergency responders in the event of a fire or other emergency at the site?

Response

Yes.

Question No. 19

Describe procedures for solar array shutdown if required by emergency responders.

Response

The main disconnect would be located on the equipment pad on the west side of the building and will be capable of de-energizing the array from the inverter terminals to the Point of Common Coupling in the main electrical room. Every main disconnect outside the building as

well as inside the building displays a map of how to disconnect each electric supply to the building.

Question No. 20

How would personnel access the top of the solar canopies?

Response

Personnel would access the top of the solar canopies by way of scissor lift from underneath the array or by a lift from above depending on the maintenance needed.

Question No. 21

What construction codes/standards are applicable to this installation to reduce or prevent damage to the structure/solar modules in the event of a vehicle fire under the canopy?

Response

Construction Type 2B (non-combustible); and Occupancy Classification S2 (open). The PV panels also maintain a UL Class A fire rating.

Question No. 22

Describe how the project design allows for unencumbered access to emergency vehicles such as a fire truck or ambulance?

Response

Minimum clearance height under the canopy structure is 14 feet 6 inches, which will allow for most emergency vehicles to access the facility and maintenance vehicles to plow the snow if necessary.

Question No. 23

Would the proposed lighting plan (with its proposed foot-candle intensity) for under the proposed canopies comply with applicable codes?

Response

Yes. Photometric design and foot candle readings would comply with City of New Haven's - Zoning ARTICLE VII. - SITE REQUIREMENTS Section 60.1. - Exterior lighting standards.

Question No. 24

Petition page 11 states there is a 1.5 to 2-inch gap between the solar panels that will allow stormwater to fall to the ground. Does this mean water will fall onto the parking area surface under the canopies through the gaps? Would this lead to concentrated water falling onto pedestrians or cars? How would sliding ice and snow be controlled?

Response

Recently, IKEA asked the Petitioner to incorporate a gutter system into the project design. Snow accumulation that occurs on module surfaces will melt in place, be captured by the gutter system and discharge via downspouts at grade. No sliding or shedding of snow to the ground will occur, due to the flat roof design and orientation of the modules. See Attachment 1.

Question No. 25

Is the ground-mounted inverter elevated to reduce the potential for flood damage?

Response

String inverters are mounted on the solar PV support columns at a height of 10 feet above grade to comply with applicable codes, ensure safety and limit access.

Environmental

Question No. 26

Would construction of the proposed facility require an application for a DEEP Stormwater permit?

Response

No, the level of disturbance required to install the solar canopy does not meet the threshold for a DEEP Stormwater Permit.

Question No. 27

Were subsurface soils evaluated for hazardous contaminants? Would excavated soils require disposal at a hazardous materials facility?

Response

Sub-surface soil characterization was performed during geotechnical drilling. Soil was deemed non-hazardous and does not require special handling or disposal facilities.

Facility Construction

Question No. 28

To what depth would the canopy column foundations be installed?

Response

Column foundations are typically 12-15 feet below grade, depending on soil conditions.

Question No. 29

Where would the construction “staging area” be located?

Response

An official staging area has not yet been identified. However, staging would be located in an area approved by IKEA that does not disrupt pedestrian and vehicle traffic on the property.

Maintenance Questions

Question No. 30

Would the design of the canopy cause snow/and or ice to accumulate and stay in place during prolonged incidents of cold weather? Is there a plan to remove snow/ice? Under what

circumstances would snow be removed? Describe snow removal methods and site access.

Response

Snow accumulation that occurs on module surfaces during prolonged incidents of cold weather will melt in place, be captured by the gutter system and discharge via downspouts at grade. No sliding or shedding of snow to the ground will occur due to the flat roof design and orientation of the modules. Snow removal from the solar canopy is therefore not required or planned. Plowing and/or clearing of snow from the parking areas around or beneath the solar canopies will continue as currently provided by IKEA's site maintenance professionals.

Question No. 31

What is the maintenance interval for the canopy support structures?

Response

Canopy support structures are inspected for maintenance purposes on an annual basis. Operation of the solar PV panels will be monitored on a daily basis by the Petitioner.

Question No. 32

Would any chemicals be used or only water for solar panel cleaning? Would this maintenance activity have any impacts to water quality discharge to adjacent waterways?

Response

Typically projects such as this in the northeast United States do not require regular cleaning. If cleaning is required, the Petitioner would use de-ionized water to clean the panels, which would not have any impact on the stormwater quality discharged from the site.

Question No. 33

Would the underside of the canopy arrays have the potential to act as shelters or as nesting areas for wildlife? Would nests/ droppings be periodically removed from the parking

areas/columns?

Response

Based on previous experience and system design, while nesting is possible, the risk is extremely low due to the limited areas that could serve as suitable habitat for nesting. If nesting were to occur, IKEA's operations & maintenance team members would remove those nests as required.

Question No. 34

What measures will be taken to prevent vandalism to the underside of the canopies; e.g., protection for wiring, graffiti, etc.?

Response

The security of the site is the responsibility of IKEA. Existing security measures include on-site security personnel and security cameras on the building. Given the height of the canopy solar system (14 feet 6 inches above the paved parking area), the enhanced lighting proposed as a part of the canopy structure, and the plan for IKEA to continue with its existing site security measures, risk of vandalism is low.

ATTACHMENT 1

Photographs of Existing DSO Canopy Solar Structures







