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June 27, 2024

Via Electronic Mail and Overnight Delivery

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

Re: Petition No. 1607 - Hanwha Q Cells America Inc. petition for a declaratory ruling, pursuant to Connecticut General Statutes § 4-176 and § 16-50k, for the proposed construction, maintenance and operation of a 4.896-megawatt AC battery energy storage facility located at Parcel No. 95-F10-247-5 and 95-F10-247-5A, 163 State Pier Road, New London, Connecticut and associated interconnection

Dear Ms. Bachman:

I am writing on behalf of my client Hanwha Q Cells America, Inc. ("Petitioner") in connection with the above-captioned Petition.

The Connecticut Siting Council ("Council") granted Petitioner's Motion for Extension of Time to provide responses to the Council's Interrogatories to Petitioner - Set 2 ("Interrogatory Nos. 67-74") on June 7, 2024, establishing a June 28, 2024 timeline for response.

Enclosed please find the answers and supporting Interrogatory Attachment Nos. 1-3 in response to Interrogatory Nos. 67-74 as well as supplemental information regarding a change in battery energy storage equipment manufacturer.

The original and fifteen copies of the answers, supporting documents, and supplemental information are being sent via overnight delivery to the Council's office.

I hereby certify that a copy of the foregoing was sent via electronic mail to the service list for Petition No. 1607 on June 27, 2024.

Please do not hesitate to contact me with any questions or concerns regarding this request.

Sincerely,

A handwritten signature in blue ink, appearing to read "Mark J. Cook". The signature is fluid and cursive, with the first name "Mark" being the most prominent.

Mark J. Cook, Esq.

STATE OF CONNECTICUT

CONNECTICUT SITING COUNCIL

HANWHA Q CELLS AMERICA INC. PETITION) PETITION NO. 1607
FOR A DECLARATORY RULING, PURSUANT TO)
CONNECTICUT GENERAL STATUTES §4-176 AND)
§16-50k, FOR THE PROPOSED CONSTRUCTION,)
MAINTENANCE AND OPERATION OF A 4.896-)
MEGAWATT AC BATTERY ENERGY STORAGE)
FACILITY LOCATED AT PARCEL NO. 95-F10-247-5)
AND 95-F10-247-5A, 163 STATE PIER ROAD, NEW)
LONDON, CONNECTICUT, AND ASSOCIATED)
ELECTRICAL INTERCONNECTION) JUNE 27, 2024

I. SUPPLEMENT

A. Supplemental Information Regarding Change In Equipment

On June 7, 2024, the Connecticut Siting Council (the “Council”) granted additional time for Hanwha Q Cells America, Inc. (“Qcells” or the “Petitioner”) to provide responses to the Council Interrogatories to Petitioner – Set 2 (“Interrogatory Nos. 67-74”) for the battery energy storage facility (“BESF”) proposed in the above-captioned petition. Petitioner explained in its request that due to the results of the interconnection design review (“Interconnection Design Review”), certain upgrades to the local utility infrastructure would be required to allow for interconnection of a 4.0 megawatt (“MW”) or more battery energy storage facility (“BESF”) at the above-referenced location. Those upgrades, and the fact that the originally intended manufacturer of the battery equipment, Sungrow will be discontinuing the BESF equipment Petitioner originally intended to utilize, have in turn required some changes to Petitioner’s proposed battery energy storage equipment. Specifically, Petitioner intends to utilize Tesla Megapack 2 XL BESF equipment (“MP2XL”). Please see Supplement Attachment A for Tesla Megapack 2 XL Datasheet in place of the initially planned Sungrow ST2752UX-US BESF equipment.

The change in manufacturer equipment however does not change the fact that the construction, operation, and maintenance of the Qcells BESF utilizing the MP2XL equipment (“Qcells BESF” or the “Project”) will similarly satisfy the statutory elements of General Statutes of Connecticut (“Conn. Gen. Stat.”) § 16-50k and will not have a substantial adverse environmental effect.

If specific information is not addressed in this Supplement, the information provided in Petitioner’s initial memorandum dated January 5, 2024 and its responses dated March 20, 2024 to the Council’s Interrogatories apply.

B. The Benefits of the Qcells BESF Remain the Same

The Qcells BESF will still provide benefits at the electricity market wholesale-level, as envisioned by Public Act 21-53, which incentivizes front-of-the-meter (“FTM”) projects on the distribution network that can help improve grid consistency and reliance by supplying saved electricity during high peak demand times, helping to avoid numerous brownouts or power failures. The Project will continue to provide grid reliance by making saved electricity available during an outage or supplementing the supply of electricity when that supply is temporarily interrupted due to large introductions of, or removals of electricity from high-volume users.

C. Qcells BESF Description Including Change In Equipment

The Connecticut Light and Power Co. d/b/a Eversource Energy’s (“Eversource”) Interconnection Design Review determined that upgrades were needed for the local Eversource utility infrastructure to accommodate the proposed Qcells BESF. Contemporaneously, Petitioner was informed that the originally proposed Sungrow battery energy storage equipment will be discontinued. As a result, Petitioner has chosen to utilize the MP2XL battery energy storage equipment. Please see Supplement Attachment A; see also Supplement Attachment B.

While the MP2XL unit is similar to the Sungrow equipment in form and function, one of the differences is each MP2XL unit will be a 4-hour unit, which refers to the maximum number of hours of output before needing to recharge. One other difference is that each MP2XL is capable of storing 979.2kW and 3,916.8kWh. Petitioner made the decision to upgrade to 4.896MW utilizing five (5) MP2XL units in order to maximize the efficiencies the utility infrastructure upgrades will allow. Five (5) MP2XL units will allow the Qcells BESF to have a total power capacity of 4.896 MW AC and will allow for the storage of up to 19.58 megawatt hours (MWh), an increase from the 4.0 MW / 11.0 MWh originally intended. Please see Supplement Attachment B – Updated site plans reflecting the change in quantity of intended BESF units and a change in the configuration of the fenced BESF.

Eversource has determined that new utility poles are needed as part of the upgrades.

Eversource is currently conducting a second Interconnection Design Review to finalize the interconnection design for the Qcells 4.896 MW BESF. Based on the determinations made as a result of the first Interconnection Design Review, Petitioner does not expect any major changes to the finalized interconnection design from what is depicted in Supplement Attachment B.

1. The Qcells BESF will consist of:

(i) Five (5) MP2XL liquid cooled battery energy storage units placed on poured concrete pads;

- Each MP2XL unit measures 28'-11"W x 5'-5"D x 9'-2"H. An MP2XL unit is less wide than a Sungrow unit by 1'-9" and narrower than a Sungrow unit by 2". And the MP2XL unit is just 8" taller than a Sungrow unit.

- Each MP2XL includes one (1) electrical cabinet including the MP2XL AC circuit breaker;

- Each MP2XL also includes a thermal management system (“TMS”) which utilizes liquid-cooling to maintain temperature for optimal performance.

- (ii) Two (2) medium-voltage transformers;**
- (iii) One (1) AC MV switch board;**
- (iv) One (1) surge arrester;**
- (v) One (1) interconnection cable;**
- (vi) One (1) aluminum unblend PVC high speed communications cable (if cellular network coverage not sufficient);**
- (vii) Eight-foot (8’) black chain-link fence with locked gate.**

The Qcells BESF will not exceed 9’ 2”, excluding the new utility poles required by the Interconnection Design Review.

The dimensions of the reconfigured Qcells BESF fenced area will be 4,203 square feet.

The Qcells BESF design including the MP2XL equipment continues to align with this Council’s White Paper as security at the facility will be very similar to methods employed for transmission substations, which include the use of a locked security fence. The Project will comply with the State compliance regulations as described under “Compliance” on page four of the Connecticut Siting Council’s White Paper on the Security of Siting Energy Facilities, published October 8, 2009.

D. MP2XL Charge / Load / Dispatch / Recharge

Comparable to the Sungrow equipment, the Qcells BESF can charge and discharge between 0.0 MW and 4.896 MW. Also comparable to the rates of the Sungrow equipment, the Qcells BESS Facility can fully recharge in 4.0 hours but this rate can vary depending on the

discharge schedule mandated by the utility. Year over year as the batteries approach replacement age, this rate may change.

Similar to the Sungrow equipment, the Qcells BESF is a Front of Meter facility and has no associated net load. As a result, the Qcells BESF will not reserve any battery storage capability for back-up power.

The Qcells BESF remains an energy storage system and not an energy generation system and as a result it does not have typical ramp rates compared to other forms of conventional generation. Also comparable to the Sungrow equipment, the Qcells BESF is capable of changing from a full 4.896 MW charge to 4.896 MW discharge in approximately less than one second.

Similar to the Sungrow equipment, all Qcells BESF battery storage units will be dispatched simultaneously and can operate at any value between 4.896 MW charge and 4.896 MW discharge. All Qcells BESF units respond together to keep degradation equal across all Qcells BESF battery storage units.

Information previously provided regarding the Sungrow batteries' anticipated life, annual degradation, and cost of replacement remains the same regarding the MP2XL batteries.

E. Consultation and Outreach

In line with the substantive communication and outreach Qcells has had with City of New London officials, Qcells provided an update to City officials regarding the change in equipment by providing updated equipment specifications and updated site plans.

In addition, continuing to work closely with the City of New London Fire Marshal's office through every step of the design, construction, and operation process, Qcells also met on June 20, 2024 with City of New London Acting Fire Marshal David Heiney reviewing the change in

manufacturer equipment as well as the MP2XL Emergency Response Guide. Please see Supplement Attachment C).

F. Environment - Air And Water Quality Standards

The change in equipment has not changed the fact that the Qcells BESF will meet the air and water quality standards of the Department of Energy and Environmental Protection and will not have a substantial adverse environmental effect.

1. Air

The Qcells BESF will not emit any harmful emissions during operation and therefore will comport with and will not require permitting under Conn. Gen. Stat. Chapter 446c.

2. Water

As discussed in Petitioner’s memorandum dated January 5, 2024, the Qcells BESS Facility will not impact water resources, will not impact the existing groundwater quality, nor will it impact the existing drainage or stormwater discharge.

The Qcells BESF remains outside any special FEMA flood zones. Please see Supplement Attachment B, Sheet E.501 for a map depicting the Qcells BESS facility’s location in a FEMA Flood Zone X.

The Qcells BESF does not use water for standard operations. The Facility’s liquid cooling system only requires an initial fill-up of water but then recycles the same water for the liquid cooling process.

The Qcells BESF continues to be unmanned and does not require sewer services.

The Qcells BESS Facility will be constructed within an area of less than one acre of land and as a result, the project will not require a General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities under Conn. Gen. Stat. § 22a-430b.

Total disturbance of land area by the Qcells BESS Facility is estimated at approximately 4,203 square feet. The small portion of access way on the Host Parcel and the areas encompassing the concrete equipment pads within the fence will be gravel. As a result, no effects to drainage patterns or storm water discharges are anticipated. Qcells will implement sedimentation and erosion controls during construction in accordance with the 2002 Connecticut Guidelines for Soil Erosion and Sediment Control, as indicated on the site plans. Please see Supplement Attachment B, Sheet E.001, Construction Note No. 21.

The Qcells BESF is designed to maintain existing topography and mimic existing drainage patterns to the maximum extents feasible. Under existing conditions, runoff from the Project Area generally flows in a northeasterly direction towards the existing parking lot and eventually to an existing storm drain on State Pier Road. The existing storm drain is approximately 200 feet northeast of the BESF and appears to be in good working condition.

Final grading and erosion and sedimentation control designs will prevent pooling around the Qcells BESF and will mimic existing drainage patterns to the maximum extents feasible. As a result, no effects to drainage patterns or storm water discharges are anticipated.

3. Sound

Petitioner has engaged Epsilon Associates to complete an acoustical modeling analysis taking into account the new MP2XL equipment. Petitioner will submit said analysis to the Council as soon as it is completed.

4. Visibility / Buffer / Screening

Each MP2XL unit is only 8” taller than the discontinued Sungrow equipment. It remains that the Qcells BESF will be screened by the existing berm to the south as well as the existing mature trees and extensive regenerative vegetation to the south and southwest.

Additionally, an opaque material will be installed inside the west end of the Qcells BESF's fencing, further screening views.

As a result of the reconfiguration of the Qcells BESF fenced area, the distance from the Qcells BESF fence and the nearest residential structure has increased by 10 feet. The nearest residential structure is located at Huntington Street, New London (New London Assessor ID 95-F09-247-7), 148 feet northwest of the Qcells BESF's southwest fence corner.

The nearest property boundary with a residence is located at Huntington Street, New London (New London Assessor ID 95-F09-247-7), 68 feet southwest of the Qcells BESF's southwest fence corner.

The distance from the east face of the Qcells BESF fence to the nearest fence located at Winthrop Cove Park is 98 feet (please see Supplement Attachment B, Sheet E.120 - Site Map) which is an increase of 12 feet, as a result of the reconfigured Qcells BESF fenced area.

G. Public Health And Safety

1. Overview

With the new MP2XL equipment, the Qcells BESF will similarly be compliant with the National Electric Code, the International Building Code, the International Fire Code, applicable National Fire Protection Association standards, and the National Electrical Safety Code all as follows, as well as all other State and local Building and Fire standards.

- 2020 National Electric Code ("NEC")
- 2021 International Building Code ("IBC")
- 2021 International Fire Code ("IFC")
- 2023 National Fire Protection Association ("NFPA") Standard 855
- 2022 NFPA Standard 110

- 2022 NFPA Standard 111

- 2023 National Electrical Safety Code (“NESC”)

An eight-foot chain link fence will be constructed around the perimeter of the Qcells BESF with a locked gate. Pursuant to the Emergency Response Guide, all of the component battery cells are sealed within the product as sub-groups within the MP2XL enclosures. Pods, or battery modules, cannot be accessed from the exterior, and are not accessible to non-qualified personnel.

H. Protections Against Thermal Runaway

1. Electrical Fault Protection

The battery modules contain DC single-use fusible links mounted directly on the battery modules. These fuses can interrupt the flow of an overcurrent in the battery module during an off-normal electrical event.

Inverter modules can quickly isolate the battery module passively or actively during an off-normal event.

Each inverter module is equipped with its own AC contactor and AC fuses.

Each MP2XL is also provided with a DC ground fault detection system. The MP2XL also contains an AC circuit breaker, with ground-fault trip settings.

2. Thermal Management System

Similar to the Sungrow equipment, the new MP2XL equipment meets UL 9540A performance criteria, which requires that no propagation may occur between a battery cell that has been ignited and the other system unit cells. The Qcells BESF will comply with the 2022 Connecticut State Fire Code Chapter 52 – Energy Storage Systems. Please see Supplement Attachment B, Sheet E.000.

Also very similar to the Sungrow equipment, the MP2XL Thermal Management System (“TMS”) provides a suitable operating temperature for optimal operation and helps to avoid thermal runaway by utilizing a closed-loop liquid cooling system that circulates a 50/50 mixture of ethylene glycol and water throughout the battery modules and power electronics to maintain optimum battery operating temperature. As a result, no storage capacity losses are anticipated due to ambient temperatures below freezing. The TMS can also warm the Qcells BESF equipment if ambient temperatures drop. The Qcells BESF will utilize power from the local distribution system for said heating and cooling. The TMS works autonomously and does not require user feedback or controls to turn the cooling system on when needed.

Each MP2XL has a thermal roof located at the top of each MP2XL unit. The thermal roof contains fans and radiators that cool the 50/50 ethylene glycol-water solution. The liquid cooling system utilizes approximately 400 liters of the ethylene glycol-water solution. Refrigerant is stored separately in a sealed system. Each MP2XL has an integrated 900 liter gravity-fed secondary coolant containment basin in its enclosure in accordance with Title 40 C.F.R. 264.174. In addition, each MP2XL has a coolant reservoir level indicator that will alert qualified personnel to be dispatched for investigation.

The Qcells BESF TMS can direct the Qcells BESF Tesla Site Controller (“TSC”) to immediately isolate and shutdown individual Qcells BESF battery units or the entire Qcells BESF. The Qcells BESF TSC and the Qcells GELI EMS Platform can also disconnect a battery or the entire Qcells BESF from the electric grid.

While the MP2XL does not have smoke detectors, each MP2XL unit has the ability to remove and ventilate errant gas very early in a thermal runaway event. When this protocol is activated, overpressure vents open automatically into each MP2XL’s thermal roof, permitting

gases to safely exhaust through the roof of the MP2XL during a thermal event. This engineered approach is permitted by NFPA 855 §9.6.5.6.4.

When this protocol is activated, the Qcells BESF Fire Control Panel would signal the City of New London Fire Department of a possible emergency event.

The Qcells BESF can also be remotely shut down and disconnected from the grid by Qcells and can be manually shut down via an external emergency stop (E-Stop) button noted as “(N) Utility Disconnect Switch” and located in the southwest corner of the Qcells BESF. Please see Supplement Attachment B, Sheet E.300.

Consistent with the guidance provided by the International Association of Fire Chiefs and American Clean Power First Responders Guide (provided in Petitioner’s responses to First Set of Interrogatories dated March 20, 2024 and provided again for reference as Supplement Attachment D and Supplement Attachment E respectively) the MP2XL units do not require an internal or external fire suppression system, or manual fire suppression (hose lines) as the use of water can cause a battery fire to appear extinguished when it is not. Similar to the Sungrow battery equipment and most lithium-ion batteries on a commercial scale, a fire in an MP2XL battery could last for approximately forty-eight hours.

Consistent with the findings of the *American Clean Power Battery Energy Storage Safety FAQs* (Supplement Attachment Exhibit F), gases released in fire events are similar to fires involving materials such as sofas, mattresses, or office furniture.

Qcells briefed Acting Fire Marshal David Heiney regarding the MP2XL’s electrical fault protections, its Thermal Management System, its other fire protection design features. Along with the MP2XL Emergency Response Guide. Qcells will provide training to the New London Fire Department prior to commencing operations. Qcells will also provide a plan depicting the

Qcells BESF layout and a map depicting areas of seventy-five feet and three hundred thirty feet from the Qcells BESF to the New London Fire Department.

During construction, a site-specific health and safety plan will be developed and implemented to protect the safety of construction personnel and Project staff.

I. Operations and Maintenance Plan

The change in equipment does not trigger any changes in the plan for the operation or maintenance of the Qcells BESF as previously described by Petitioner.

Qcells will conduct on-site inspections and maintenance from time to time in accordance with the manufacturers' recommendations. Qcells will maintain the Facility pursuant to all manufacturers' specifications and applicable codes and/or laws as well as all safety best practices and industry best practices. Qcells remains responsible to maintain the area within the fenced Qcells BESF area, including vegetative control, snow removal, and litter clean-up as necessary. And the property owner remains responsible for maintaining the landscaping including vegetative control, mowing, snow plowing, and litter clean-up outside the fenced Qcells BESF, including the access way over 163 State Pier Road.

J. Construction Schedule

The Construction Schedule previously presented by Petitioner does not require modification due to the change in equipment. Site Preparation will still take approximately two to four weeks. Installation will still take approximately four to six weeks, and Commissioning will still take approximately four to six weeks.

And the only changes required for the Qcells BESF New London Milestone Schedule are due to the second Interconnection Design Review being conducted by Eversource. A revised Qcells BESF New London Milestone Schedule is presented as follows:

Table 1 – Qcells BESS Facility – New London Milestones

Qcells BESS Facility - New London Milestones	Date Projected
Interconnection	
Impact Study Report / Interconnection Design Review	October 2024
Interconnection Agreement Executed	March 2025
Permitting	
All Approvals and Permits Secured	September 2024
Final Engineering and Design	
90% Construction Engineering Design	October 2025
90% Interconnection Engineering Design	November 2025
Procurement	
BESS Supplier Contract Awarded	June 2025
EPC Contract Awarded	August 2025
Other Major Equipment Procured	January 2026
BESS Delivered to Site	April 2026
Aux. Power Transformer Procured	September 2026
Construction	
Qcells BESS Facility - New London - Online	January 2027

K. Conclusion

As set forth in this Supplement, the Qcells BESF satisfies the statutory elements of Conn. Gen. Stat. § 16-50k and its construction, operation and maintenance will not have a substantial adverse environmental effect. Accordingly, this Petition should be approved by the Council.

II. PETITIONER RESPONSES TO INTERROGATORY NOS. 67 – 74

67. Referring to the response to Council Interrogatory 15, what is the depth of discharge for the Sungrow batteries?

The MP2XL batteries can provide 4.896MW on demand power and will discharge up to 10% of its stored capacity.

68. Referring to the response to Council Interrogatory 17, how is the appropriate temperature maintained for the battery stacks?

The MP2XL thermal management system (“TMS”) provides a suitable operating temperature for optimal operation and helps to avoid thermal runaway by utilizing a closed-loop liquid cooling system that circulates a 50/50 mixture of ethylene glycol and water throughout the battery modules and power electronics to maintain optimum battery operating temperature. The TMS can also warm the Qcells BESF equipment if ambient temperatures drop. The TMS works autonomously and does not require user feedback or controls to turn the cooling system on when needed.

69. Referring to the response to Council Interrogatory 34(b), how and when would the Fire Marshal notify all property owners within 330 feet that evacuation or shelter in place orders may be imposed if there was an emergency at the BESF?

In Petitioner’s June 20, 2024 meeting with New London Acting Fire Marshal David Heiney, Acting Fire Marshal Heiney stated that New London Fire Department officials responding to an emergency event involving the Qcells BESF would assess the situation on scene and would determine whether evacuation protocol was warranted. If evacuation was deemed appropriate, Fire Department members would evacuate by knocking on doors of properties within the determined evacuation radius.

70. Referring to the response to Council Interrogatory 34(f), provide an aerial image showing all properties within a radius of 75 feet and 330 feet from the proposed BESF.

Please see Interrogatory Attachment Nos. 1 and 2 attached. These radius maps will be provided to the New London Fire Department before the Qcells BESF commences operation.

71. Referring to the response to Council Interrogatory 37, besides ester oil, what other materials within the transformer combustible?

Ester oil is the only combustible component within the two medium-voltage transformers.

72. Referring to the response to Council Interrogatory 66, at what height could snow block the airflow to the chiller and/or electronic compartments?

As a result of the change in equipment, snow accumulation potentially blocking airflow is no longer an issue. Air flow for the MP2XL Thermal Management System is achieved via vents located near the very top of each 9' 2" MP2XL unit.

73. What is the use of the paved area on the host parcel between Crystal Avenue and the abutting parcel at 163 State Pier Road? Can a driveway to the BESF be developed across this area, with access from the northeast corner of the 163 State Pier Road parcel, to access the BESF?

That portion of the paved area between Crystal Avenue and the abutting parcel at 163 State Pier Road does not have an active current use. Within 12 feet of that paved area however, the South East Area Transit District ("SEAT") operates a public bus stop at the corner of Crystal Avenue and State Pier Road, as shown in Interrogatory Attachment No. 3. Creating a vehicular ingress / egress from State Pier Road or Crystal Avenue in the immediate area of this SEAT bus stop would not be safe or practical.

Regarding utilizing the existing entrance to 163 State Pier Road and turning towards the referenced paved area for access to the Qcells BESF: Allowing vehicular traffic in close proximity to the designated SEAT bus stop is not safe or practical. In addition, emergency vehicles entering the 163 State Pier Road existing entrance would not achieve the turn radius necessary to be able to effectively use the referenced paved area. Per the lease agreement between Qcells and the property owner, the property owner is required to keep the Access Way (Please see Supplement Attachment B, Sheet E.100) free and clear of vehicles or other access impediments. The Access Way represents the safest and most direct path to and from the Qcells BESF for emergency vehicles, construction vehicles, and maintenance vehicles.

74. Referring to Petition pp. 13-14, is the preliminary design of the Project at least 50 percent complete? If not, would construction comply with the *Connecticut Soil Erosion and Sediment Control Guidelines* and *Connecticut Stormwater Quality Manual*, effective March 30, 2024?

Yes, the preliminary design of the Qcells BESF is at least 50 percent complete. The preliminary design is reflected in the updated site plans submitted herein as Supplement Attachment B.