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April 1, 2024

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

Re:

Petition No. 1606 – Endurant Energy petition for a declaratory ruling, pursuant to Connecticut General Statutes §4-176 and §16-50k, for the proposed construction, maintenance and operation of a 4.9-megawatt AC battery energy storage facility located at 65 and 105 Vine Street, Middletown, Connecticut, and associated electrical interconnection

Dear Ms. Bachman:

Enclosed for filing with the Connecticut Siting Council ("Council") are Endurant Energy's responses to the Council's February 26, 2024 interrogatories.

An original and fifteen (15) copies of this filing will be hand-delivered to the Council today.

Should the Council have any questions regarding this filing, please do not hesitate to contact me.

Very truly yours,

Bruce L. McDermott

Enclosures

Murtha Cullina LLP 265 Church Street New Haven, CT 06510 T 203.772.7700 F 203.772.7723

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 1: Has Endurant Energy (Endurant) received any comments since the Petition was submitted to the Council? If yes, summarize the comments and how these were addressed.

A-CSC 1: One comment was received. It is from the Council on Environmental Quality in relation to noise emissions from the BESF. The Council suggests that the noise emitter classification should not be Class C (Utility – limit of 61 dBA) but Class B (Education – limit of 55 dBA), and therefore meet Class B emitter requirements to the adjacent Cemetery, which Endurant is in agreement is a Class A receptor.

Endurant has addressed these comments by revisiting the site, to look in more detail at the topography under discussion and its implications in relation to noise emission and reception. Endurant has also asked Cavanagh Tocci to redo the test, given Endurant amended the layout to address a point from the City in relation to potential impact on parking, post the original report.

Rather than argue about the interpretation around whether the emitter should be Class A or B, Endurant would like to draw the Council's attention to the fact that at the property boundary the estimated sound level produced by the facility is 59 dBA. The figure also indicates that 30 feet from the property boundary, facility sound impacts are reduced to 55 dBA or lower. It should be noted that this region of the Indian Hill Cemetery property is a steep wooded hill that is not likely to be occupied by sensitive receptors. In fact, Endurant believes that sound produced by the proposed Project would not exceed 45 dBA (the most stringent nighttime limit of the noise regulation) at any location on the cemetery property where people might gather.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 2: Referencing Petition page 5, what Energy Storage Solutions Program (ESSP) incentives apply to the project?

A-CSC 2: The project will be eligible for the CT Energy Storage Solutions Program Passive and Active Dispatch upfront and Performance incentives at the Large Commercial Tier rate. It will also be eligible for the Summer and Winter Performance Incentives under the Active Dispatch program. The project has received a Reservation of Funds from the CT Green Bank.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 2

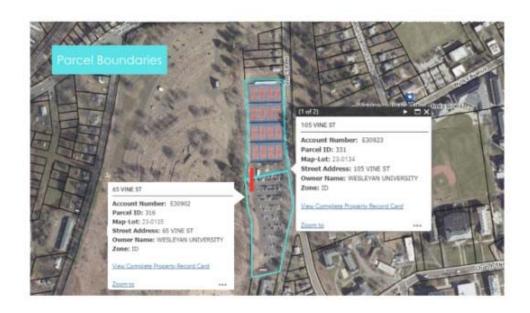
Q-CSC 3: Submit a map clearly depicting the boundaries of the battery energy storage facility (BESF) site and the boundaries of the host parcel(s). Under Regulations of Connecticut State Agencies (RCSA) §16-50j-2a(29), "Site" means a contiguous parcel of property with specified boundaries, including, but not limited to, the leased area, right-of-way, access and easements on which a facility and associated equipment is located, shall be located or is proposed to be located.

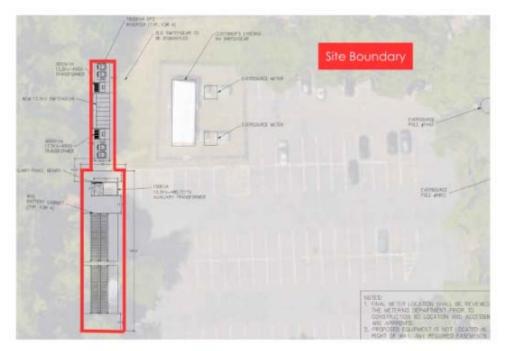
A-CSC 3: The Site is defined as the area of the host parcel that is to be leased by Endurant and is identified by the BESF perimeter fencing. No rights-of-way, access or easements are associated with the proposed Site. The final dimensions may vary slightly from what is shown depending on utility requirements. Please see the image below.

Endurant Energy Docket No. 1606

Witness: Brian Mehler

Page 2 of 2







Battery Energy Storage System Wesleyan University 65 Vine Street Middletown, Connecticut

Figure 4
Parcel and Site Boundaries

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 4: Has the property owner expressed any concerns or requested any specific requirements related to decommissioning or site restoration at the end of the project's useful life? If so, please describe.

A-CSC 4: No. The property owner has not expressed any concerns or requested any requirements related to decommissioning or site restoration.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 5: Referencing Petition p. 10, it states the existing defunct University utility infrastructure located at the southern end of the 105 Vine Street parcel will be demolished and removed.

- a. Who would be responsible for its demolition and removal?
- b. At what point in the BESF construction process would the defunct infrastructure be demolished and removed?
- Could delay in demolition and removal of the defunct infrastructure adversely impact development of the BESF site? Explain
- A-CSC 5: The existing defunct infrastructure would be the responsibility of the developer in consultation with the university as it is already being planned for. The demolition and removal would take place during the larger construction phase, after final utility system impact studies are complete. This would be early in the construction phase as part of the "site preparation" process. Delays to the project or process are not expected to result from the demolition, and would be scheduled in coordination with university, town, and local stakeholders to minimize disruption to school schedules, etc.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 6: Referencing Petition p. 25 and Appendix C -Zoning Map, what is the length and width of the existing access drive to the point where it would reach the

BESF?

A-CSC 6: The existing width of the existing access drive is approximately 31 feet and

its length is approximately 118 feet.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 7: Referring to Figure 3, provide the distance and direction of the facility from the nearest publicly accessible area.

A-CSC 7: The nearest publicly accessible area is the Vine Street entrance approximately 188 feet from the facility, located to the east.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 8: How would the BESF impact parking at the site both during and after construction? How would Endurant manage the parking impacts?

A-CSC 8: Because the facility will be located at the far edge of the parking lot, there will be minimal disruption. Additionally, site work will be scheduled in coordination with the university to minimize impact on parking lot access. Endurant will work with the university to arrange appropriate signage, direction, boundary marking, and other measures to adhere to the campus' existing infrastructure and maintenance protocols.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 9: Referencing Petition p. 10, provide the distance of the facility from the Indian Hill Cemetery, the nearest dormitory, and the nearest academic building.

A-CSC 9: The facility will be approximately 280 feet from the nearest perimeter of the Indian Hill Cemetery, 340 feet from Nicolson Dormitory, and 1,000 feet from the Office of Continuing Studies and Admissions Administration Office, all to the east of the planned BESF.

Endurant Energy Docket No. 1606 Witness: Brian Mehler Page 1 of 1

Q-CSC 10: Provide the size of the fenced compound area.

The size of the fenced compound area is expected to be approximately 8,000 square feet, including set-backs. A-CSC 10:

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 11: Provide the distance, direction and address of the nearest off-campus residential property line to the proposed facility.

A-CSC 11: The direction and address of the nearest off-campus residential property line is 97 Butternut Street, Middletown, approximately 950 feet to the west of the proposed facility, on the other side of the Indian Hill Cemetery.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 12: Provide the distance, direction and address of the nearest off-campus residential structure to the proposed facility.

A-CSC 12: The direction and address of the nearest off-campus residential property line is approximately 965 feet to the west of the proposed facility, on the other side of the Indian Hill Cemetery.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 13: What is the approximate percentage of Wesleyan University's annual electric load that would be served by the BESF?

A-CSC 13: The facility will be able to reduce Wesleyan's annual electric load by 4.99MW, but as a percentage, this will greatly depend on the campus' existing demand at any point in time while the battery is operating, other onsite generation sources operating, and other demand management measures being conducted at that time.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 14: How long will it take for the BESF to attain full output from when it is dispatched?

A-CSC 14: It will take the BESF 2-3 hours to fully discharge when dispatched. It can reach the full nameplate output power level within milliseconds.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 15: What is the cumulative efficiency of the discharge output (e.g.- the BESF can only discharge 90% of its stored capacity)?

A-CSC 15: The cumulative efficiency of the output discharge is approximately 93%, accounting for efficiency losses in the inverter, transformer, conduits, and other balance of system equipment.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 16: What storage capacity losses are anticipated for ambient temperatures

below freezing?

A-CSC 16: The battery operates in a range of -30 degrees Celsius (-22 degrees

Fahrenheit) up to 55 Celsius (131 Fahrenheit). Power derate happens

above 45 Celsius.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 17: Would the BESF utilize power for cooling and heating of the battery packs? If yes, would this power source be from stored energy or from the local distribution system?

A-CSC 17: No heating is required, however there is a liquid cooling system to cool the batteries, which is sourced from the local distribution system when there is no energy in the cells. The auxiliary power also powers the fire alarm and BMS. The peak auxiliary power load is 32.7kW.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 18: Referencing Petition p. 6, it states the BESF will be connected behind the customer's electric utility meter, which will allow the facility to run on battery power during peak demand time. It further states the BESF will operate in parallel with the grid and can also export power into the utility distribution system, during peak demand times. During peak demand times does the grid or the University utilize the BESF output?

A-CSC 18: The system is designed so that both could utilize the output. During peak demand times, the facility will likely use the full BESF output.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 19: Does the University operate at full capacity on weekends? If no, would the BESF be dispatched to export excess power to the grid?

A-CSC 19: No, the University does not operate at full capacity on the weekends. The BESF is not expected to export on the weekends at this time.

Endurant Energy Docket No. 1606 Witness: Brian Mehler Page 1 of 1

Q-CSC 20: Referencing Petition pp. 21-22, assuming favorable energy prices, what is the minimum time it would take the BESF to fully recharge after a full

9.8MWh AC discharge?

A-CSC 20: Two hours.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 21: Referencing Petition p. 15, what is the status of the interconnection agreement with Eversource? Is it anticipated the battery manufacturer/model will change based on the interconnection agreement?

A-CSC 21: The BESF is in the "System Impact Study" phase of the Eversource process. The interconnection agreement will be issued once that study process is concluded. No changes to the battery manufacturer or model are expected at this time, but may depending on the utility process and study outcomes.

Endurant Energy Docket No. 1606 Witness: Brian Mehler Page 1 of 1

Q-CSC 22: Referencing Petition p. 14, provide the distance from the facility to the utility interconnection point.

A-CSC 22: Approximately 150 feet.

Endurant Energy Docket No. 1606 Witness: Brian Mehler Page 1 of 1

Q-CSC 23: Referencing Petition p. 16, what is the length of the proposed underground electrical interconnection?

A-CSC 23: Approximately 150 feet.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 24: Referring to Petition Appendix G, provide the estimated sound levels from BESF operation at the nearest residential structure.

A-CSC 24: According to the sound assessment, the system will not be heard from the nearest residential structure.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 25: Referencing Petition Appendix G – Sound Assessment, will the system generate noise during charging of the facility, discharge of the facility, neutral conditions (i.e. neither charging nor discharging), or all three? Was the modeling performed for the worst-case scenario, and does such scenario also take into account any fans for the cooling system? Explain.

A-CSC 25: The system will generate sound when charging and discharging and when the air conditioning system is in use. The scenario takes the cooling fans into account. Neutral conditions ('standby mode') do not generate noise. The sound assessment was modelled on the 'worst-case' scenario and examined noise levels from all the equipment of the proposed system, including the batteries, the inverters and the transformers.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 26: Provide the design specifications of the proposed fence. Did Endurant

consider an anti-climb design?

A-CSC 26: As noted in the petition, Endurant discussed the fence with the Director of

Planning and Development, Engineer Liaison for Middletown. As written, the zoning regulations require fencing that can be seen through and that is a maximum height of 4 feet within 50 feet of a public road. Endurant informed him that Endurant would note that Endurant plans for chain link fencing at this site rather than our standard palisade fencing, which is harder to climb, to try to comply with the town's wishes to the best of our ability however we would request 8 feet not 4 feet height. Endurant discussed that the town's regulations are designed 'in spirit' to protect residential areas, rather than meant for commercial or industrial sites like this. There is no code or standard addressing fence height requirement for this application and there is no exposed 'live' electrical equipment, but for public safety Endurant does not wish members of the public to have easy access to the

BESF hence our request for a minimum of 8 feet height.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 27: Would bollards be used to protect the BESF from being accidentally struck

by a vehicle?

A-CSC 27: Bollards will be included within the fenced area to protect the equipment

where necessary.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 28: Is a gap proposed between the bottom of the fence and grade? What animal deterrents are in place for small animals, such as nesting birds, chewing

rodents, etc.?

A-CSC 28: No gap is proposed. All equipment and any penetrations are properly sealed to limit intrusive rodent concerns. Endurant's experience is that this is

sufficient, however regular visual inspections will confirm.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 29: Referencing Petition p. 19, a battery fire would be self-extinguishing. What is the typical duration of a battery fire before it self-extinguishes? If one

battery caught fire, can it easily spread to adjacent batteries? Explain.

A-CSC 29: BESS fires can take several hours to burn themselves out. Each battery system completes UL 9540A testing which is a destructive test method used for evaluating the thermal runaway impacts in a BESS and gathering data to assist in assessing or developing mitigation plans. Endurant would only consider deploying systems which have demonstrated no module-to-module propagation. The BYD Cube Pro is made up of 24 battery packs in 8 racks with 3 packs per rack, and with 114 cells per pack. The 9540A testing showed only 5 cells damaged during the test confirming the design

limited propagation within the module and will not propagate through the entire BESS nor adjacent BESS. The test indicated no external flames or

explosive gas levels were detected.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 30: Referencing Petition p. 28, when and what type of testing would be conducted on the BESF exhaust fan/sensors, and smoke, thermal and gas detectors prior to installation at the site?

A-CSC 30: The battery systems come with on-board sensors and detectors that meet UL, NERC, and NFPA standards. The exact make and model of sensors will depend on the final system design and equipment suppliers selected. The detectors will have communications and alert protocols to communicate instantaneously with battery system control rooms, on-site facilities, and the local fire department.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 31: Referencing Petition Appendix A, a lithium-ion phosphate safety data sheet is provided. The sheet states the battery may burst and release hazardous decomposition products when exposed to a fire situation. If a battery burst,

- a. would smoke from the fire be considered hazardous and require notification to local authorities?
- b. would smoke require area residences to stay in place or evacuate? If yes, who would determine if these actions are necessary?
- A-CSC 31: a. Smoke from a potential fire could be hazardous, but would depend on the type of fire and what equipment is impacted. It is in our EMP and design-build process to work with, and hold formal training sessions with fire department personnel prior to commercial operation so that fire response scenarios are planned for, mapped, and standardized ahead of time.
 - b. there are no residences within the immediate vicinity of the proposed BESF. Endurant does not envisage that any residences would be required to evacuate, however the Middletown Fire Department would determine what actions they deemed to be appropriate, and Endurant would provide any support requested of them by the Fire Department.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 32: Would Endurant dispatch personnel to the BESF in the event of a fire? Where would Endurant personnel be located that can respond to site emergencies?

A-CSC 32: The BESF is remotely staffed, except for semi-annual routine maintenance activities when contractors are on-site however it is continuously remotely monitored by a Remote System Operator via a proprietary system called Enerwise, which is built and operated by CPower, Endurant's associate company with whom Wesleyan have a pre-existing contractual relationship for demand response services. In the event of a fire, an Endurant employee would be available 24/7 by telephone and would consult with responders to provide system information useful in event characterization and response planning. A member of Endurant's team would be dispatched to the location as soon as possible (at most 24 hours).

On-site members of the property owner's team will be designated as the BESF contact/liaison and will be trained on the BESF and in emergency response protocols related to the facility. The designated liaison would respond immediately to the event, and provide information and facilitate communication with Endurant staff. During an emergency response event, staff personnel and emergency responders are automatically contacted. The communications plan will be reviewed and approved by the Middletown Fire Department, and training on its implementation will be conducted with Middletown Fire Department and Wesleyan staff, after installation and prior to operation. See Petition Appendix J for further detail on Emergency Planning and Communications.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 33: Petition pp. 25-26 states explosion risk would be minimized by exhaust fans/sensors. Are these features susceptible to fire and subject to failure? Are they within a fire enclosure?

A-CSC 33: Upon heat or smoke detection the fans will activate and vents will open allowing the system container to vent well before any fire may propagate through the BESF to cause damage. If both redundant fans were to fail, the pressure balancer would be activated to further mitigate explosion risk. The pressure balancer balances pressure when pressure difference occurs in the container. Pressure difference would arise due to insufficient air flow.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 34: What explosion mitigation system is more effective, vent panels or an exhaust system? Explain.

A-CSC 34: NFPA 855 requires one of two methods of explosion control; the first is deflagration management with the use of explosion panels which will direct the impact of explosion to minimize damage; the second is the use of active ventilation to prevent the buildup of explosive of flammable gases to reduce the risk of explosion. The latter, active ventilation, is preferred due to its proactive nature. In the event of the failure of both redundant exhaust fans, the systems are equipped with a passive pressure balancer which will activate if unvented air builds up pressure to allow air/gases to vent.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 35: Referencing Petition Appendix E, the air-cooling refrigerant safety data sheet states refrigerant and the storage cylinders could be explosive under certain conditions. Would a battery fire or other fire at the site potentially cause the refrigerant or storage cylinders to explode?

A-CSC 35: The refrigerant becomes combustible at over 1,400 degrees F. The battery system under fire will not reach that temperature.

Endurant Energy Docket No. 1606 Witness: Brian Mehler Page 1 of 1

Q-CSC 36: Referencing Petition Exhibit E –a transformer oil safety data sheet is provided.

- a. How much oil is contained within the transformer?
- b. Are there alarms (such as low-level oil alarms) that can alert personnel of a leak? If not, how would a leak be detected?
- c. Do the transformers have a leak containment system? If yes, describe.

A-CSC 36:

- a. The current design includes dry type transformers, which are air cooled, without the use of oil. Response below applies to oil transformers." This language has been at the beginning of the previous interrogatory responses for the same question. I believe it was just inadvertently omitted in the response draft.
- b. Yes, there will be oil leakage detection. In some cases, capacitive printed sensors can ensure oil leaks are detected early. Spray detection is another approach.
- c. Yes, there are standard leak mitigation and management systems built into the transformers and this varies between make/models.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 37: Provide the acreage of tree clearing, if any, required to develop the site.

A-CSC 37: Tree clearing is not expected for this project, however, tree trimming is likely to be required. This will depend on the system's final design and siting once

the utility interconnection process is complete and final equipment selection

is certain.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 38: Have drainage characteristics of the proposed site been evaluated to ensure water will not pool around the BESF? Where would stormwater be directed?

A-CSC 38: The site is on an existing levelled paved parking lot and level grass space. A preliminary review was undertaken to confirm no critical issues. Stormwater would be directed to existing storm drainage system infrastructure anticipated to be to the east of the site in accordance with the existing parking lot. This will be determined during the pre-detailed engineering survey process.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 39: Referencing Petition p. 23, has Wesleyan expressed a preference for a

fence design or other type of screening, including, but not limited to, use of

privacy slats or installation of adjacent landscaping?

A-CSC 39: This has not been discussed in great detail with the University, but will be

designed in collaboration with the University's facilities team and other key

stakeholders.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 13

Q-CSC 40: Submit photographic site documentation with notations linked to the site plans or a detailed aerial image that identify locations of site-specific and representative site features. The submission should include photographs of the site from public road(s) or publicly accessible area(s) as well as Site-specific locations depicting site features including, but not necessarily limited to, the following locations as applicable:

For each photo, please indicate the photo viewpoint direction and stake or flag the locations of site-specific and representative site features. Site-specific and representative site features include, but are not limited to, as applicable:

- 1. wetlands, watercourses and vernal pools;
- forest/forest edge areas;
- 3. agricultural soil areas;
- 4. sloping terrain;
- 5. proposed stormwater control features;
- nearest residences:
- 7. Site access and interior access road(s);
- 8. utility pads/electrical interconnection(s);
- 9. clearing limits/property lines;
- 10. mitigation areas; and
- 11. any other noteworthy features relative to the Project.

A photolog graphic must accompany the submission, using a site plan or a detailed aerial image, depicting each numbered photograph for reference. For each photo, indicate the photo location number and viewpoint direction, and clearly identify the locations of site-specific and representative site features show (e.g., physical staking/flagging or other means of marking the subject area). The submission shall be delivered electronically in a legible portable document format (PDF) with a maximum file size of <20MB. If necessary, multiple files may be submitted and clearly marked in terms of sequence.

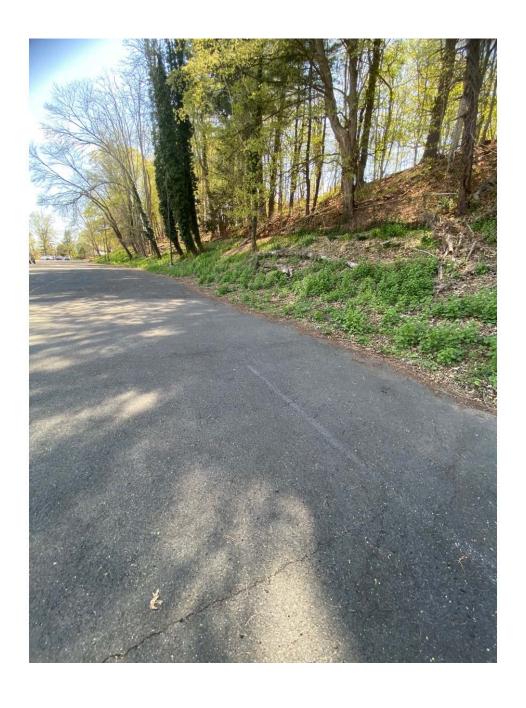
Endurant Energy Docket No. 1606 Witness: Brian Mehler

Page 2 of 13



Endurant Energy Docket No. 1606 Witness: Brian Mehler

Page 3 of 13



Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 4 of 13



Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 5 of 13



Endurant Energy Docket No. 1606

Witness: Brian Mehler

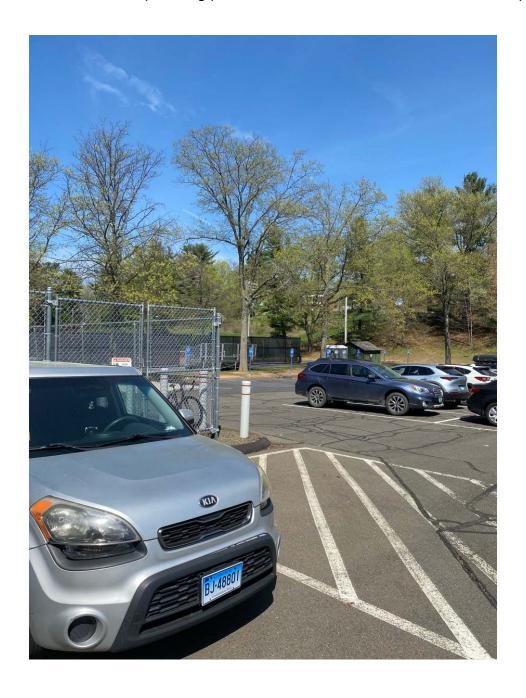
Page 6 of 13



Endurant Energy Docket No. 1606

Witness: Brian Mehler

Page 7 of 13



Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 8 of 13



Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 9 of 13

A-CSC 40: The attached photolog provides additional views of the area of the project.

Wesleyan Site Access Photo 1:



Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 10 of 13

A-CSC 40: The attached photolog provides additional views of the area of the project.



Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 11 of 13

A-CSC 40: The attached photolog provides additional views of the area of the project.



Endurant Energy Docket No. 1606 Witness: Brian Mehler Page 12 of 13

A-CSC 40: The attached photolog provides additional views of the area of the project.



Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 13 of 13

A-CSC 40: The attached photolog provides additional views of the area of the project.



Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 41: Referring to Petition p. 17 would any excess cut and fill material be removed from the site or deposited on the site?

A-CSC 41: Endurant expects to excavate up to 400 cubic yards of earth. Most of it will be removed off-site to avoid inconveniencing Wesleyan, and taken to an appropriate facility based upon the soil composition tests. Endurant will perform soil borings to assess the conditions of the soil and ensure proper treatment and disposal plans and notifications are made based upon the results of the tests.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 42: Provide detailed site plans with notes/plans for site construction and environmental mitigation.

A-CSC 42: The final site and construction plans are not yet finalized for this project because it is still too early in the utility interconnection process. Endurant is more than happy to issue copies of those documents to the CSC, and to other pertinent stakeholders, once those are complete. Environmental mitigation measures to be taken during site clearing and construction will include the use of silt fencing to control erosion and runoff during precipitation events, water spray to reduce dust, minimizing the clearing necessary for the project, and standardizing operating times to minimize sound and light impacts outside of normal business hours. Construction will be coordinated with University personnel to ensure continued access to the University facility by emergency responders and other critical traffic during the construction phase.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 43: When does Endurant anticipate an Operations and Maintenance Plan for the proposed facility will be available?

A-CSC 43: Endurant expects an Operations and Maintenance Plan for the facility to be available once the final system design is completed, approximately two months following the utility's completion of the System Impact Study process.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 44: Referencing Petition pp. 15 and 28, please provide the following information:

- a. What is the anticipated annual degradation of battery storage capacity?
- b. At what remaining battery capacity is replenishment recommended?
- c. What is the estimated cost of replenishment?

A-CSC 44: a. Please refer to the annual degradation table for the proposed batteries (note that this table is purely at the battery container level and does not include losses of energy throughput in the balance of plant equipment).

BYD Degradation Curve

Start of Year	365 cycles per year	
Year	Minimum energy retention	Annual reduction
1	100.0%	
2	93.8%	6%
3	91.1%	3%
4	89.0%	2%
5	87.2%	2%
6	85.6%	2%
7	84.1%	1%
8	82.7%	1%
9	81.5%	1%
10	80.3%	1%
11	79.1%	1%

- b. This is not applicable, because the business model does not involve replenishment. The only circumstances under which replenishment would take place would be under manufacturer's warranty, due to a failure of the battery to meet required performance targets.
- c. This is not applicable, because the business model does not involve replenishment. The only circumstances under which replenishment would take place would be under manufacturer's warranty, due to a failure of the battery to meet required performance targets.

Endurant Energy Witness: Brian Mehler Docket No. 1606 Page 1 of 1

Q-CSC 45: What minimum snow depth would require removal within the BESF

compound?

A-CSC 45: No snow removal is required, regardless of depth.