

February 26, 2025

VIA HAND DELIVERY AND ELECTRONIC MAIL

Melanie.bachman@ct.gov Siting.council@ct.gov

Ms. Melanie A. Bachman, Esq., Executive Director Connecticut Siting Council Ten Franklin Square New Britain, CT 06051

Re: Petition No. 1651 – responses to first set of interrogatories

Dear Attorney Bachman:

This office represents Fairy Lake, LLC ("Petitioner") in the above-captioned matter. On behalf of Petitioner, I have enclosed an original and fifteen copies of Petitioner's responses to the first set of interrogatories issued by the Connecticut Siting Council. Petitioner has filed a motion for protective order contemporaneously with these responses regarding Interrogatory No. 10.

Please do not hesitate to contact me with any questions.

Very truly yours,

Jesse A. Langer

Enclosures

STATE OF CONNECTICUT CONNECTICUT SITING COUNCIL

PETITION OF FAIRY LAKE, LLC : PETITION NO. 1651

FOR A DECLARATORY RULING THAT : A CERTIFICATE OF ENVIRONMENTAL : COMPATIBILITY AND PUBLIC NEED : IS NOT REQUIRED A 4.99-MEGAWATT :

AC BATTERY ENERGY STORAGE : FACILITY AT 380 NEW LONDON :

ROAD, SALEM, CONNECTICUT : February 26, 2025

PETITIONER'S RESPONSES TO THE FIRST SET OF INTERROGATORIES BY THE CONNECTICUT SITING COUNCIL

Fairy Lake, LLC ("Petitioner") respectfully submits the following responses and non-privileged documentation to the First Set of Interrogatories issued by the Connecticut Siting Council ("Council") in connection with the above-captioned matter.

Notice

1. Has Fairy Lake, LLC (FLL) received any comments since the Petition was submitted to the Council? If yes, summarize the comments and how these comments were addressed.

RESPONSE: FLL has not received any comments outside of those provided by the Council since FLL submitted the Petition to the Council.

- 2. Referencing Petition p. 6, has FLL held an informational session with the Town of Salem fire departments? If yes, where was the meeting held, when was it held and what comments were received?
 - RESPONSE: FLL held an informational session with the Town of Salem ("Town") Fire Depertments on December 9, 2024, at the Gardner Lake Volunteer Fire Company Firehouse. FLL received comments regarding (1) the approach to the project site with fire apparatus and (2) how first responders can contact the offsite fleet controller, supervisory control and data acquisition (SCADA) operations center or other third-party dispatch and monitoring entity to understand where the event is occurring. FLL continues to have an ongoing dialogue with Town's Fire Departments about emergency response protocols.
- 3. Referencing Petition p. 7, what concerns did the Town Inland Wetlands & Conservation Commission have regarding the Project? How were these concerns addressed?

RESPONSE: The Commission had questions about the type of liquid cooling used inside the BESF module, secondary containment, and water supply on-site. There were also questions about the costs to rate payers and benefits to the Town. FLL responded to these questions. None of the questions required a change in the configuration of the project. Many of them have been or will be addressed in the ongoing dialogue with the Town's Fire Departments or the Public Utilities Regulatory Authority ("PURA")'s front-of-the-meter ("FTM") storage program.

Public Benefit

- 4. Please respond to the following related to public benefit:
 - a) Would the proposed facility be necessary for the reliability of the electric power supply of the state? Explain why or why not.
 - b) Would the proposed facility be necessary for the development of a competitive market for electricity? Explain why or why not.
 - c) Would the proposed facility contribute to the forecasted generating capacity requirements? Explain why or why not.
 - d) Would the proposed facility reduce dependence on imported energy resources? Explain why or why not.
 - e) Would the proposed facility diversify the state's energy supply mix? Explain why or why not.
 - f) Would the proposed facility enhance reliability? Explain why or why not.
 - g) Would the proposed facility provide winter reliability benefits for the grid in the event that natural gas supplies are curtailed and/or backup oil supplies are limited for natural gas-fired power plants in the region?

RESPONSE:

- a) Yes. Depending on the final design of the PURA's FTM storage program, this project would either participate directly in the ISO New England capacity market providing direct reliability benefits through additional capacity, or be treated as a 'load reducer' by Connecticut's utilities reducing the utilities' contributions to peak demand and, thus, reducing costs and improving grid reliability. Regardless of the program model chosen by PURA, this project would make direct contributions to reliability by enhancing the grid's capability to respond to extreme weather and high demand events. Lastly, the FTM storage program also will likely require participating resources to respond to a utility-called capacity event to receive compensation. These events coincide with periods of high demand and can help alleviate reliability concerns.
- b) Yes. Through the passage of Public Act 21-53, the Connecticut Legislature recognized the need for robust energy storage to increase grid resiliency and reliability. This policy is codified at General Statutes §§ 16-243cc through 16-243ee. A key component of this policy is an energy storage industry. The FTM energy storage market in Connecticut is in its nascency and this project would be among the first in the State, helping to establish the State's competitive market. Further, as this project plans to participate in the regional electricity market, FLL would contribute to the provision of competitive electric supply.
- c) FLL interprets this question as asking about the forecasted need for increased capacity resources in ISO New England. Please see the answer to subpart a) of this question. FLL would provide needed capacity to the New England grid and the Connecticut distribution system, providing both reliability and capacity benefits.
- d) Yes. The facility would store energy when prices are the lowest, which typically coincides with the periods of lowest demand when rate payers are least reliant on imported energy. The facility would then dispatch that stored energy when prices are highest and/or in response to events called by the electric distribution utility, both of which are highly correlated to periods of high demand and a significant reliance on imported energy resources, in particular, imported natural gas.

- e) Yes. Energy storage is necessary to the buildout of intermittent generation, such as solar and other Class I renewable energy sources, which diversifies the State's energy mix. Increased storage deployment allows for solar and other renewable energy sources to be stored and discharged when it can offset expensive fossil fuel generation.
- f) Yes. Please see the response to subpart a) of this question. Further, this project is located on a "grid edge" circuit, identified as one of the least reliable circuits in Connecticut. PURA has encouraged the siting of resources on these circuits to help balance the supply and demand to increase reliability.
- g) Yes. In situations when the facility is charged when natural gas supplies are curtailed and/or backup oil supplies are limited. At these times, the facility is most likely to discharge the stored energy to alleviate grid constraints. The facility would provide up to four hours of relief at maximum capacity in this situation.
- 5. Referencing Petition p. 3, has there been any progress on energy storage program design? If so, has FLL submitted a Project bid? What program incentives apply to the project?
 - RESPONSE: Yes. On January 10, 2025, PURA initiated Docket 25-01-15, entitled "Front of the Meter Storage Program." FLL's affiliate, BlueWave Project Development, LLC, is a docket participant and intends to actively participate throughout the process.
- 6. Would FLL participate in an ISO-NE Forward Capacity Auction for the Project? If yes, which auction(s) and capacity commitment period(s)? If no, does Fairy Lake currently have a Capacity Supply Obligation with ISO-NE for the Project?
 - RESPONSE: FLL would participate in the Forward Capacity Market if PURA's FTM program allows for stand-alone BESFs to do so. There is a possibility that PURA would not allow a BESF to participate in Connecticut's FTM program and the Forward Capacity Market. FLL intends to wait for PURA's final FTM program before deciding on the Forward Capacity Market.
- 7. How is the proposed facility consistent with the objectives of the state Conservation & Load Management Plan?
 - RESPONSE: The proposed facility would contribute to at least two of the objectives of the Conservation & Load Management Plan ("Plan"): Decarbonization and Affordability. Regarding decarbonization, energy storage is widely recognized as a necessary tool for widespread decarbonization of the electric grid. The Plan recognizes the role of energy storage by specifically calling it out as a component of the Plan. The Connected Solutions program is similar to the proposed PURA FTM storage program and FLL would be well aligned with the objective of decarbonization. Regarding affordability, energy storage dispatches during times of peak demand, reducing the impact of the highest cost hours on rates. Further, the 2018 Comprehensive Energy Strategy has a goal to "integrate efficiency, storage, and renewables to manage peak demand" as part of Strategy 8: Modernize the Grid. Taken together, energy storage would advance the policy objectives of the State.
- 8. Referencing Petition p. 8, how would the project be responsive to the Town's Plan of Conservation and Development and concerns about grid resiliency? Would the facility be able to supply power to the local area if the overhead interconnection is lost between the site and the substation? Explain.
 - RESPONSE: The Town's 2022 Plan of Conservation and Development ("POCD") outlines many of the Town's priorities with respect to land and economic development. These priorities were a factor

in the selection of this site. As noted in the POCD, "[w]ith the preservation of the rural character of Salem a prime directive, Salem's industrial, commercial, and general business zones are exclusively located along the State Routes 11, 82, 85, and 354 which pass through Salem." POCD, ch. 1, p. 6. As FLL is located in a business zone along Route 85, its location advances the desire to concentrate development along certain transit corridors.

The POCD further notes a desire to "reduce dependence on residential property taxes by encouraging economic development" POCD, ch. 3, p. 17. FLL would pay property taxes to the Town, increasing the share of local taxes paid by commercial enterprises and reducing dependence on residential property taxes.

Regarding grid resiliency, Customized Energy Solutions and Sustainable Energy Advantage were contracted by Eversource and Unitil to perform a cost benefit analysis for FTM projects like FLL.² One of the specific benefit inputs is "Reliability." By reducing peak demand on the utility's system, FLL would provide a reliability benefit to ratepayers, including ratepayers who are Town residents. This is also congruent with the Town's POCD, which expresses concern with "frequent power outages." POCD, ch. 8, p. 54. Lastly, the proposed BESF is located on a "grid edge" circuit as identified by Eversource. Please see response to Interrogatory No. 20, below.

Due to the BESF's connection to the local utility grid, the facility would not be able to supply power to specific locations in the Town if the overhead connection is lost between the site and the substation.

Project Development

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

RESPONSE: FLL would need a General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities and a building permit from the Town. The permits would be in the name of FLL.

10. What is the estimated cost of the project? How are costs recovered? Is the energy being purchased at market rates?

RESPONSE: FLL respectfully objects to this interrogatory as it exceeds the scope of a petition under General Statutes § 16-50k. Subject to this objection, FLL has submitted a Motion for Protective Order so it can respond to this Interrogatory under that protective order.

11. Does FLL have an agreement to provide energy storage with a specific entity? Identify the entity and the term energy storage agreement. If the facility operates beyond the terms of such agreement, will FLL decommission the facility or seek other revenue mechanisms?

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¹ The POCD is available at: https://www.salemct.gov/sites/g/files/vyhlif4966/f/uploads/adopted_pocd_2023_with_ahp_appendix.pdf

² Available at: https://www.dpuc.state.ct.us/dockcurr.nsf/8e6fc37a54110e3e852576190052b64d/761a507593c51aca85258a940069 376a/\$FILE/55183970.pdf/Attachment%204 CES Dx%20FTM%20Energy%20Storage%20Projects%20in%20CT, %20BCA%2012122023.pdf

RESPONSE: FLL respectfully objects to this interrogatory as it exceeds the scope of a petition under General Statutes § 16-50k. Subject to this objection, FLL responds as follows: FLL does not currently have an agreement to provide energy storage to a specific entity. This project is a stand-alone FTM BESF. FLL is awaiting the release of the FTM program by PURA. FLL would participate in that program and the wholesale energy and capacity markets, as eligible. FLL would decommission the facility at the end of any incentive program or if no other revenue streams are available.

12. What is the length of the lease agreement with the property owner? Describe options for lease extension(s), if any.

RESPONSE: FLL respectfully objects to this interrogatory as it exceeds the scope of a petition under General Statutes § 16-50k. Subject to this objection, FLL responds as follows: the lease is for a 20 year initial term with four 5 year extensions.

13. If FLL transfers the facility to another entity, would FLL provide the Council with a written agreement as to the entity responsible for any outstanding conditions of the Declaratory Ruling and quarterly assessment charges under CGS §16-50v(b)(2) that may be associated with this facility, including contact information for the individual acting on behalf of the transferee?

RESPONSE: Yes.

Proposed Site

14. 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.

RESPONSE: Please sheet SP-1, as revised, which is appended hereto as Attachment 1.

15. Referencing Petition p. 5 and Attachment 1, does the lease with the host parcel owner allow for use of the BESF access drive by any other party, including, but not limited to, the host parcel owner? If yes, how will unimpeded emergency access to the BESF be maintained?

RESPONSE: The lease grants FLL a non-exclusive access easement over the area including the proposed access road. This access allows for unimpeded emergency access to the BESF. To FLL's knowledge, only the property owner and FLL have access rights to the proposed access road.

16. Referencing Petition p. 5 and Attachment 1, would a temporary bridge over Horse Pond Brook be required at the time the two additional battery units and associated equipment are installed?

RESPONSE: Yes but please see response to Interrogatory No. 17.

17. Referencing Petition p. 5 and Attachment 1, would a temporary bridge over Horse Pond Brook be required at the time the Project is decommissioned? Was a permanent bridge considered? Explain and provide estimated costs.

RESPONSE: Based on further evaluation of the Project and consultation with the Town's Fire Departments, FLL has determined to maintain the modular bridge in place for the 20-year life of the project, including during the decommissioning period.

18. Could the access road be reconfigured or could an alternate access road configuration be developed that does not cross Horse Pond Brook? Explain and provide estimated costs.

RESPONSE: No. Horse Pond Brook crosses most of the Property effectively cutting it in half east to west. Such a configuration would require access from an adjacent property, which FLL explored but determined to be unfeasible as it would require agreements from the adjacent property owner or crossing through active delivery and greenhouse areas. The current configuration is the most feasible approach because it follows an existing gravel access drive and would limit any potential impacts to the watercourse and other on-site wetland areas.

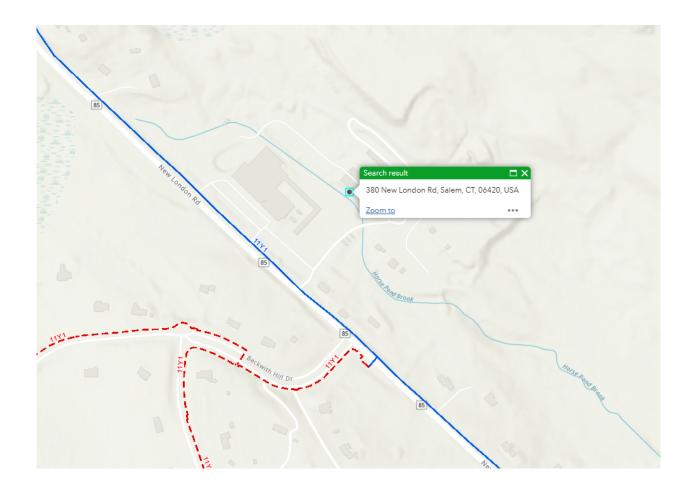
19. Explain why the proposed site was selected for this Project.

RESPONSE: FLL takes a number of factors into consideration when selecting project sites, including environmental factors, utility interconnection, and landowner engagement. The Property is a good candidate for a BESF for the following reasons (1) the Property is zoned for commercial uses; (2) the Property is fairly large allowing FLL to tuck the BESF into an unused portion; (3) the project would connect to a "grid edge" circuit (see response to Interrogatory No. 20 below); and (4) the project could be configured to minimize adverse environmental impacts. This particular site also allows for a local business to realize additional revenue from the lease.

20. What are the benefits of the proposed site location? For example, is the proposed site located within a "load pocket" area or on the "grid edge"?

RESPONSE: This project is located on a "grid edge" circuit as evidenced by the screenshot below from Eversource's Grid Edge map from the Energy Storage Solutions program.³ The Energy Storage Solutions program provides priority to projects located on the "grid edge" that experience higher than usual disruptions to electric service. Thus, the project's location has the potential to deliver resilience benefits to an area that has historically experienced power quality challenges.

³ Available at:



21. Provide the distance, direction and address of the nearest property line from the proposed BESF perimeter fence and nearest part/corner of the battery containers.

RESPONSE: The nearest property line from the proposed BESF perimeter fence is 412 New London Road, which is 41.5 feet – specifically from the northeast corner of the perimeter fence. The nearest property line from the nearest part/corner of the battery containers is 47 Emerald Glen Lane, which is approximately 66 feet to the north/northwest. This is the distance from an augmentation unit. Otherwise, the distance is 75 feet to the nearest battery unit.

- 22. Please confirm the following:
 - a) Distance from the BESF perimeter fence to nearest property line;
 - b) Distance from the BESF perimeter fence to the nearest residential property line if the nearest property line referenced above is not residential;
 - c) Distance from the nearest part/corner of the battery containers to the nearest property line; and
 - d) Distance from the nearest part/corner of the battery containers to the nearest residential property line.

RESPONSE:

- a) 41.5 feet to 421 New London Road.
- b) 43.5 feet to 47 Emerald Glen Lane.
- c) 67 feet to 412 New London Road.

d) 75 feet to 47 Emerald Glen Lane (66 feet from the nearest augmentation battery container).

Proposed Facility and Associated Equipment

23. Provide the number of battery racks per battery storage unit, the number of battery modules per battery rack and the number of battery cells per battery module.

RESPONSE: There are 104 battery cells in a Battery Pack. There are 4 Battery Packs in a Battery Rack. There are 12 Battery Racks in a Battery Module.

24. Referencing Petition p. 5, when would the additional two battery units be installed? What is the reason for the delayed installation?

RESPONSE: FLL would install 1 additional unit during the fifth year of operation and another unit during the fifteenth year of operation. The additional units help maintain the nameplate AC capacity as the batteries degrade over the twenty-year lifespan.

25. What is the output of the facility with five battery units?

RESPONSE: The Day 1 output of the facility would be 4.99 MW AC.

26. If the two battery units are installed at a later date, would additional inverters, transformers, recombiners or other equipment be necessary?

RESPONSE: No.

27. Provide a compound site plan showing the location of the two future units and the location of any associated additional equipment.

RESPONSE: The existing civil plans include the location of the two future units. As discussed in response to Interrogatory No. 26, FLL would not need to install additional equipment to support the two future units. Please see Attachment 1, Sheet SP-1, which also depicts the augmentation units.

28. Petition Site Plan SP-1 shows an overhead line crossing above a shed. Does the shed need to be relocated for line clearance? What is the height of the line above the shed?

RESPONSE: No. The shed is approximately 12 feet high. The anticipated height of the new poles would be approximately 35 feet above the ground. The height of the line would depend on the layout (i.e., spacing) of the poles, as that would dictate the line sag. Regardless, the final height of the overhead line crossing above the shed would meet or exceed that of typical roadway clearance.

29. Referencing Petition p. 6, the power inverters would be derated. Does FLL plan to utilize the full rated capacity of the inverters in the future? Explain.

RESPONSE: No. The inverters would operate at the de-rated value of 998kW per inverter for the entirety of the facility's operational life.

Energy Output BW

30. How will the facility be dispatched and by whom?

RESPONSE: The facility would be dispatched by a registered lead market participant (LMP) under contract with FLL. Dispatch is based on several factors, including:

- 1. ISO New England Market Signals BESFs participate in energy, capacity, and ancillary services markets operated by ISO-New England. They dispatch based on real-time and dayahead market prices, responding to price spikes or grid needs.
- 2. Time-of-Use and Demand Management Some battery sites are programmed to discharge during peak demand hours to reduce costs or maximize revenue, often in the late afternoon to early evening when electricity prices are highest.
- 3. Utility Programs & Incentives PURA's FTM program (to be run by Eversource and UI) will offer incentives for dispatching stored energy during peak grid demand periods. Some batteries are contracted to discharge at specific times as part of these programs.
- 4. Grid Emergencies & Reliability During extreme weather or grid stress events, battery sites may be dispatched to provide grid stability and backup power.
- 31. When would the facility be dispatched (actively and passively) and for what duration?

RESPONSE: The facility can charge and discharge for four hours at its full capacity of 4.99 MWs. In general, the facility would be operated to charge during periods of low load (and lower wholesale costs) and charge during high load periods.

32. Can the facility operate between 0 and 4.99 MW? Would each module be dispatched based on need?

RESPONSE: Yes.

33. Is the facility required to reserve any battery storage capability for backup power? Where would the backup power be used and by whom?

RESPONSE: Yes. The backup power would be used for the battery containers, HVAC system and control auxiliary demand, as necessary.

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

RESPONSE: Due to the augmentation and oversizing strategy, the facility would be able to discharge 100 percent of its nameplate AC capacity throughout its operational life.

35. When would the facility recharge (ex. off-peak hours)? What factors are considered for the recharge interval? Explain.

RESPONSE: In general, the facility would recharge during times of low grid load (off peak hours). Factors to be considered include, but are not limited to, real time electricity rates, BESF operational requirements under a PURA incentive regime, and minimization of battery degradation over time.

36. Is the BESF contracted to fully discharge its capacity or would any of the capacity be held in reserve to prolong battery life?

RESPONSE: The facility is designed to charge and discharge up to 19.96 MWh and does not withhold any capacity in reserve.

37. What storage capacity losses are anticipated for ambient temperatures below freezing?

RESPONSE: The inverter can maintain KVA up to -30° deg Celsius (-22° Fahrenheit).

38. Would the BESF utilize power for cooling and heating the battery packs? If yes, would this power source be from stored energy or from the local distribution system?

RESPONSE: Yes. The facility would use the reserve backup power for heating and cooling functions.

39. Is the 4.99 MW AC output based on the point of electrical interconnection?

RESPONSE: Yes.

40. Referencing Petition p. 4, the facility would have a maximum delivery of 19.96 MWh/4hours. Each battery unit would have energy a storage capability of approximately 4.8 MWh each or approximately 24.0 MWh in total. Is the remaining balance of approximately 4 MWh a reserve storage, due to electrical losses, to prevent a full depletion of the batteries or other reason(s)? Explain.

RESPONSE: The facility is designed with five inverters, each de-rated to 998kW. Each inverter is connected to a battery. Even though the facility has a total capacity of 24,000 kWh, it only charges up to 19,960 kWh. The remaining balance of 4 MWh is due to electrical losses from the charging/discharging cycle and degradation of the battery cells.

41. Referencing Petition Attachment 2- BESS Project Specifications, define Round Trip Efficiency (RTE).

RESPONSE: RTE is defined as energy output of a BESS divided by the energy input during a charging and discharging cycle. The battery in this system has a rated round-trip efficiency of 94 percent.

Electrical Interconnection

42. Is the existing electrical distribution system on New London Road three-phase, or would it have to be upgraded to three-phase to accommodate energy output from the BESF? If yes, for what circuit length and to what location?

RESPONSE: Yes, the existing electrical distribution system on New London Road is three-phase. No network upgrades are necessary.

43. How are utility upgrade costs calculated? What costs are borne by the customer and by the utility?

RESPONSE: No network upgrades are necessary for this project. The local distribution company analyzes potential upgrade costs based on the results of the Feasibility Study, System Impact Study, and Facilities Study. The upgrade costs are typically borne by the customer seeking to interconnect with the distribution system.

44. What is the line voltage of the 11Y1 distribution circuit on New London Road?

RESPONSE: 23 kV.

45. What substation connects to the 11Y1 distribution circuit?

RESPONSE: The Flanders 11Y1 substation.

46. Referencing Petition p. 6, what is the status of the system impact study? Was the study based on five or seven battery units?

RESPONSE: The System Impact Study was completed on November 12, 2024, and was based on a 4.99 MW BESF with 2 generic battery units with no specific manufacturer/model. As part of the finalization of the Interconnection Agreement, FLL is working with Eversource to update the single line diagram (SLD) to include the 5 units as shown in the plan drawings, and with the same total capacity. Over 20 years of system operation, the battery units will degrade, necessitating the addition of 2 more units to maintain full system capacity. The planned location of the two additional units is shown on the design plan along with the initial 5 units. Please see Attachment 1.

47. Is it anticipated the battery manufacturer/model will change based on the interconnection agreement?

RESPONSE: No.

48. Did the System Impact Study determine whether the project would have a cumulative impact on facilities used for the provision of regional transmission service?

RESPONSE: The System Impact Study ("SIS") concluded that the project would have no adverse impacts on customer voltages, power quality or cause excess capacitor bank operations. The SIS did not address regional transmission service. In that regard, FLL has not yet received the results of the Affected System Operator ("ASO") study.

49. Referencing Petition p. 5, what is the status of the final interconnection agreement?

RESPONSE: Eversource will provide an Interconnection Agreement after the ASO is completed.

50. Referencing Petition page 5 and Site Plan SP-6, what is the approximate height of the interconnection utility poles above ground level? Would the interconnection require 5 or 6 new poles?

RESPONSE: The interconnection utility poles are expected to be standard distribution system poles, which are typically 35 feet high. The number of poles required would be determined by Eversource in their design. FLL anticipates that up to 6 poles would be required.

51. Would the facility be able to automatically disconnect from the grid in the event of a fault or other electrical disturbance? Explain.

RESPONSE: Yes. In the event of a fault or other electrical disturbance, the facility would be able to disconnect automatically via the main disconnect switch (GOAB) on the BESF side.

Public Health and Safety

52. Would the project comply with the current National Electrical Code (NEC), the National Electrical Safety Code (NESC) and National Fire Protection Association codes and standards? What codes and standards apply to battery storage facilities?

RESPONSE: Yes. A list of applicable codes for eStorage's SolBank 3.0 can be found in eStorage's Safety Manual, which is appended hereto as <u>Attachment 2</u>. Some of these codes are referenced in the Connecticut State Fire Prevention Code ("CSFPC"), with which the project would also comply.

53. What are the typical causes of a battery fire? What is the typical duration of a battery fire before it self-extinguishes?

RESPONSE: Battery fires are typically caused by electrical issues (*i.e.*, short circuit, overcharge, etc.), mechanical issues (*i.e.*, physical damage, excessive heating both internally and from external fire sources, etc.), or manufacturing defects which can cause a cell to go into thermal runaway. Thermal runaway is a chemical reaction which results in an uncontrollable temperature increase within a battery cell and can result in a release of flammable gases from the battery cell. A single battery cell gas release and/or fire duration typically is in the range of 1-3 minutes.

54. Referencing Petition Attachment 2- BESS Project Specifications, what fire suppression option will be selected for the site? What advantage does one suppression system have over the other?

RESPONSE: Attachment 2 of the Petition states the SolBank 3.0 can be installed with an optional aerosol or dry pipe sprinkler suppression system. FLL does not intend to install either of these optional systems though they permitted CSFPC. even are under Water is the preferred agent to manage BESF fires; however, water applied directly to involved battery racks inside of the initiating unit (i.e., with the dry pipe suppression system) may generate water run-off concerns and the potential for water damage to non-involved batteries. Other traditional fire protection engineering suppression methods, such as aerosols, are unlikely to be effective. There are no independent, large-scale tests demonstrating that these suppression agents are effective for utility scale battery cabinets. Industry guidance is to allow the batteries to burn and provide exposure protection when required. See response to Interrogatory No. 56 for additional information regarding emergency response techniques.

55. What mechanisms are in place to reduce the possibility of a fire from spreading from one battery unit to an adjacent battery unit?

RESPONSE: The SolBank 3.0 has multiple layers of safety to maintain optimal operating conditions and prevent a thermal runaway event from occurring. These safety layers include a battery management system (BMS), a thermal management system (TMS), and passive barriers (*i.e.*, physical barriers within the module and rack design) to prevent a full container fire event. In the unlikely event of failure and a fire in one container, the BESF containers are provided with a physical separation distance to prevent the likelihood of fire propagation between containers. SolBank recommends a minimum clearance of 11.5 feet from the front side of the SolBank 3.0. The proposed installation would have a clearance of 15 feet from the front side of the containers, which is above and beyond the minimum distance recommended by eStorage.

56. What type of fire suppression media can be applied directly to a battery fire? Would specialized equipment be required to extinguish a battery storage/electrical component fire at the site?

RESPONSE: FLL does not recommend direct suppression of battery fires due to the unique fire hazards associated with utility scale lithium-ion battery cabinets (*i.e.*, deep seated, shielded thermal event). This aligns with guidance provided by eStorage on page 24 of its Safety Manual, which states "e-STORAGE does not advise direct firefighting tactics" See <u>Attachment 2</u>. as well as firefighting industry guidance from the Fire Department Safety Officers Association (FDSOA), International Fire Chiefs Association (IAFC), International Association of Fire Fighters (IAFF), National Fire Protection Association (NFPA), and the National Volunteer Fire Council (NVFC).

Water applied directly to the outside of a distressed outdoor rated battery container provides minimal benefit and may generate water run-off concerns and the potential for water damage to non-

involved batteries. Industry guidance is to allow the batteries to burn and provide exposure protection when required. If manual firefighting tactics are used, water is considered the preferred agent for managing lithium-ion battery fires, wetting nearby combustibles/vegetation, cooling nearby exposures, and controlling smoke. As stated in response to Interrogatory No. 55, other traditional fire protection engineering suppression methods, such as gaseous agents (e.g., CO2, Halon), dry chemical suppressants, aerosols, or foams, are unlikely to be effective. Importantly, FLL and the Town would outline response tactics in the Emergency Response Plan ("ERP") currently in development. In conjunction with the ERP, FLL would facilitate training, provided by Fire Risk Alliance ("FRA"), its fire safety consultant, to ensure fire department familiarity with the hazards and response tactics. No specialized equipment is required to respond to a battery fire.

57. Are there municipal fire water sources located in the immediate vicinity of the proposed project for response tie-in in the event of a fire? Explain.

RESPONSE: There are no municipal fire water sources available in the vicinity of the project site. There is, however, a dry hydrant in the pond located onsite to the southwest of the BESF. First responders would be able to access the dry hydrant, if necessary, in the event of a fire.

58. Would water runoff and/or fire extinguishing media require cleanup or remediation by an environmental spill response contractor?

RESPONSE: Real world BESF fire events have not yielded contaminants in levels dangerous to people. For instance, an analysis was conducted on fire water runoff following the Escondido fire event (a fire event involving an outdoor BESF cabinet) and concluded "the water quality is within acceptable limits for most contaminants, especially when considering public health standards for drinking water. The low levels of metals detected, combined with the absence of more toxic elements like lead and cadmium, suggest that the water poses minimal risk both to human health and the environment." The SDGE Water Run-Off Report is appended hereto as <u>Attachment 3</u>. As discussed in response to Interrogatory No. 56, applying water directly to a distressed battery container is not recommended; rather, water should be applied only to adjacent exposures for cooling purposes.

59. How would fire suppression water and/or media be contained during an emergency to ensure it does not runoff into adjacent wetlands?

RESPONSE: Runoff from the site would flow to a stormwater detention basin, which would be constructed to the west of the project site. As discussed in response to Interrogatory Nos. 56 and 58, it is not recommended to apply fire suppression water directly to involved battery containers. As such, water runoff would be limited to water used for exposure cooling purposes. Based on previous real world events, the water quality from fire suppression runoff has been found to be within acceptable contaminant limits.

60. Is there a standard or recommended minimum distance of a lithium-iron phosphate battery to a publicly accessible area? What entity established such distance?

RESPONSE: The CSFPC requires a minimum of 10 feet distance between battery containers and lot lines, public ways buildings, stored combustible materials, hazardous materials, high-piled stock and other exposure hazards not associated with the electrical grid.

61. Provide a draft emergency response plan specific to the proposed facility that incorporates most recent emergency response guidance from fire response organizations and the manufacturer and comments from the local fire department.

RESPONSE: FRA is preparing a draft that will be forthcoming.

62. Referencing petition p. 14, describe the safety features integrated within the Battery Management System Supervisory Control and Data Acquisition (SCADA). Would loss of internet or communication lines affect emergency notification and internal system response?

RESPONSE: Each SolBank 3.0 module houses 12-rack mounted Battery Management Systems ("BMS"), one for each string of battery cells. The BMS is easily accessible for installation and maintenance within the central User Interface Cabinet of the SolBank 3.0. The internal BESF response would not be affected by a loss of internet or communication. These systems work autonomously and do not require input or controls from off site to operate. Loss of internet or communication lines may affect emergency notification depending on the methods of notification transmission from the fire alarm panel to the central station; however, the communication pathway between the BESF fire alarm panel and the central station is monitored, as required by the CSFPC. Therefore, FLL does not expect a prolonged loss of communication between the two. In addition, the fire detection, fire alarm, and explosion prevention system would receive backup power as required by the CSFPC to provide required functions in the event of loss of power.

63. Describe the potential battery vent gas release scenarios from a thermal runaway event at the proposed facility site.

RESPONSE: A thermal runaway event may generate and release battery vent gases. Common causes of thermal runaway are described in response to Interrogatory No. 52. The release scenarios depend upon the initiating cause of thermal runaway. In the unlikely event of thermal runaway, battery gas is typically vented from a single cell within a 1-3 minute time frame, additional battery cells may begin to vent based on the consequences associated with the initiating event. In the event of a battery vent gas release scenario, the gases released, predominantly Hydrogen, Methane, Carbon Monoxide and Carbon Dioxide, would be detected by the gas detection system installed inside the SolBank 3.0. The NFPA 69 ventilation system would activate and exhaust these gases from the cabinet to outside ambient air.

- 64. In regard to a thermal runaway event at the BESF:
 - a) Would smoke from a battery unit fire be considered hazardous and require notification to state and local authorities?
 - b) Would smoke from a battery unit fire require area residences to stay in place or evacuate? If yes, who would determine if these actions are necessary and who ensures notifications have been made?
 - c) Would the final Emergency Response Plan contain a map with addresses of all properties requiring evacuation and/or isolation for certain types of emergencies? What methodology was used to determine the size of the evacuation and isolation zones?
 - d) What type of emergencies would require the evacuation and/or isolation of all persons downwind of the BESF?

RESPONSE:

a) Smoke from all fires is inherently composed of hazardous products of combustion and soot. Because of this, all fires may pose a risk to first responders; however, battery fires do not release any unique or atypical fumes first responders do not typically encounter in common fire scenarios, such as a house or vehicle fires. Independent research has shown that BESF fires do not release unique or atypical fumes. According to a New York State Energy Research & Development Authority (NYSERDA) study, the average toxicity level of fumes from a BESF fire is similar to those from burning plastic-based household materials such as sofas, mattresses, or office furniture

(Considerations for ESS Fire Safety, Rev. 4, Feb. 9, 2017).⁴ Real world BESF fire events have also demonstrated there are no measurable toxic hazards off site. Real time air monitoring conducted during previous BESS events (SDGE Battery Fire Air Quality Report and Idaho Power Air Monitoring and Sampling Summary) have found that "there were no detections observed during real-time air monitoring that exceeded health-based action levels for chemicals potentially associated with the fire." See <u>Attachment 3</u>.

- b) The nearest residence is located more than 300 feet from the BESF units. As discussed in the response to subpart a), based on independent testing on BESF and experience with previous real world BESF fires, the potential impact of toxic gases from a BESF fire event is anticipated to be limited to the site. In the unlikely event of a thermal runaway event, industry guidance recommends real time monitoring at the BESF fence/property line and at nearby receptors (such as the nearest house) to inform emergency response decisions/evacuation zones. Guidance published by the 2023 Firefighter Safety Standdown recommends an initial evacuation area of 150 feet, which is less than the distance to the nearest residence.
- c) As discussed in the response to subpart a), based on independent testing on BESF and experience with previous real world BESF fires, the potential impact of toxic gases from a BESF fire event is anticipated to be limited to the site. In the unlikely event of a thermal runaway event, industry guidance recommends real time monitoring at the BESF fence/property line and at nearby receptors (such as the nearest house) to inform emergency response decisions/evacuation zones.
- d) As discussed in the response to subpart a), based on independent testing on BESS and experience with previous real world BESF fires, the potential impact of toxic gases from a BESF fire event is anticipated to be limited to the site. In the unlikely event of a thermal runaway event, industry guidance recommends real time monitoring at the BESF fence/property line and at nearby receptors (such as the nearest house) to inform emergency response decisions/evacuation zones.
- 65. What is Canadian Solar's recommended safe distance between a SolBank battery unit exhibiting thermal runaway and unprotected individuals?

RESPONSE: eStorage provides the following guidance regarding a SolBank 3.0 battery unit exhibiting thermal runaway: "In the event of a fire, or indication of a fire within the SolBank, e-STORAGE recommends that first responders establish a secure perimeter, monitor, and approach only when determined safe to do so by an incident commander or other qualified authority." See <u>Attachment 2</u>, p. 24.

66. What preventative measures are available to prevent a thermal runaway event?

RESPONSE: Please see response to Interrogatory No. 55. The SolBank 3.0's multiple layers of safety ensure batteries are used in their designed operating conditions (*i.e.*, prevent electrical issues). Also, the BESF is located on a secured site to prevent physical issues. Additionally, the SolBank 3.0 is certified to UL 9540, which ensures the batteries are designed and assembled with quality materials and methods (*i.e.*, reduce likelihood of manufacturing defects).

⁴ The study can be accessed at https://www.nyserda.ny.gov/-/media/Project/Nyserda/Files/Publications/Research/Energy-Storage/20170118-ConEd-NYSERDA-Battery-Testing-Report.pdf

67. Petition Attachment 7, Emergency Response Plan, p. 10 references lithium-ion battery failures. Does Canadian Solar have an emergency response guide for the SolBank lithium-iron phosphate battery containers? If yes, provide a copy. If not, will Canadian Solar assist in the development of the site emergency response plan? What written material will they provide to assist in the development of the plan?

RESPONSE: eStorage has developed a document titled "SolBank 3.0 Safety Manual" version 1.1, dated August 1, 2024, which provides guidance for site level ERP development. See Attachment 2.

68. Compare the safety characteristics of lithium-iron phosphate and lithium-ion battery technology.

RESPONSE: Lithium-iron phosphate ("LFP") is a specific type of lithium-ion battery chemistry. In other words, LFP is a subset of the broader lithium-ion battery family, distinguished by its unique cathode material and characteristics. Therefore, LFP batteries are a lithium-ion battery.

69. Describe how emergency contact information would be made available at the site. Where will written copies of the Emergency Response Plan be located?

RESPONSE: FLL would maintain emergency contact information on signage at the entrance to the site, as required by the CSFPC, keep written copies of the ERP in a weatherproof box at the entrance to the site. Additionally, FLL would provide the fire department with a copy of the ERP and, with the assistance of FRA, train fire department personnel on the ERP prior to site operation.

70. Referencing Petition page 5, what type of insulation fluid would be used within the transformers? How much oil will each transformer contain? Do the transformers have an insulating oil containment system and/or a low-level oil alarm? If not, how would an oil leak be detected and contained?

RESPONSE: Typically, transformers use food grade oil, which is environmentally benign and does not require an alarm based leak detection system. FLL would inspect transformers regularly and the full time remote monitoring system would detect any malfunctions.

71. Referencing Petition Attachment 5 – Sound Evaluation, 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 Explain.

RESPONSE: The equipment associated with the BESF was evaluated under worst-case conditions, with all equipment operating at 100 percent capacity. This would be the case for full charge/discharge load at high ambient temperature. When the BESF is neither charging nor discharging, the BESF would continue to generate sound due to the need to maintain battery temperature, but at a substantially reduced sound level.

72. Referencing Petition Site Plan SP-2, it states sound barrier details would be determined by the owner. Does "owner" refer to FLL or the host parcel owner?

RESPONSE: FLL.

73. Would a reconfiguration of the compound where the battery units are located to the southeast reduce noise levels at the northwest property line?

RESPONSE: Yes. FLL's proposed configuration accounts for several other factors including the NFPA Code, wetland boundaries and upland review areas, and the existing onsite greenhouse operations. Additionally, the offsite areas closest to the proposed compound are rural and not actively

used. Thus, FLL proposed the sound mitigation measures in balancing these factors and the surrounding area.

74. Would operation of the BESF cause discernible vibrations at off-site locations?

RESPONSE: No.

75. What are industry Best Management Practices for Electric and Magnetic Fields at battery storage facilities?

RESPONSE: FLL is not aware of specific BMPs for Electric and Magnetic Fields ("EMF") at BESFs. The EMF levels at BESFs are minimal. The BESF would comply with all applicable local, state, and national electrical code requirements including for bonding and grounding of all metal enclosures.

76. Petition Site Plan SP-2 indicates the fence would have a 4-6 inch gap between the bottom of the fence and grade. Does the BESF design include deterrents for small animals, such as nesting birds, chewing rodents, etc.?

RESPONSE: Yes. The battery unit containers are designed to keep out small animals. FLL has also incorporated an anti-climb fence and is open to incorporation of additional deterrents. Please refer to <u>Attachment 2</u> for updated fence detail.

77. Describe how the proposed facility would comply with the Council's White Paper on the Security of Siting Energy Facilities, *available at*: https://portal.ct.gov/-/media/CSC/1_Dockets-medialibrary/Docket_346/whitepprFINAL20091009114810pdf.pdf

RESPONSE: FLL would use signage warning of high voltage and anti-climb fencing to secure the BESF. FLL would also ensure that the BESF adheres to the compliance portion of the Council's White Paper at page 4, specifically NERC compliance.

78. Referencing Petition Attachment 5, p. 17, the site is located within a New London Department of Public Utilities Public Drinking Supply Watershed. Describe construction and operation methods that will be protective of watershed resources.

RESPONSE: FLL would implement protective measures that meet the Connecticut Department of Health's General Construction Best Management Practices for Sites within a Public Drinking Water Supply Area (July 2014). FLL would use the following measures to protect watershed resources: (1) multiple layers of Compost Filter Socks and Silt Fence protecting the downstream to prevent sediment run-off into water sources and (2) the installation of a stormwater management basin post-construction so that any sediments associated with the project site settle before water enters the watershed.

79. Are there any drinking water wells in the vicinity of the site? If so, how would FLL protect the wells and/or water quality from potential construction and operational impacts?

RESPONSE: The site and surrounding properties are all served by private water wells. FLL does not anticipate the need for any additional precautions, beyond the planned erosion and sedimentation controls and resource protection measures, to protect well and water quality. The project requires relatively shallow construction and, thus, implementation of BMPs would be sufficient.

80. Submit a site-specific Fuel Storage and Spill Prevention Control Plan for site construction and operation with worker training and contact information including, but not limited to, regulatory agencies, spill cleanup contractors, and emergency responders.

RESPONSE: FLL does not intend to store fuel at the site. Please see a draft Site Specific Spill Prevention Control Plan appended hereto as <u>Attachment 4</u>. At this stage of the project, there are certain details that FLL would add to the plan moving forward, including specific contractors and some aspects of emergency procedures.

Environmental Effects and Mitigation Measures

81. A residential structure at the abutting property at 47 Emerald Glen Lane is located on a ridge above the site. Is year-round or seasonal visibility expected from this residence?

RESPONSE: There would be extremely limited seasonal views from portions of the abutting property at 47 Emerald Glen Lane. Over 650 feet of heavily wooded land separates that residence from the project site.

82. 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;
- 2. forest/forest edge areas;
- 3. agricultural soil areas;
- 4. sloping terrain;
- 5. proposed stormwater control features;
- 6. 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.

RESPONSE: The remote field review is appended hereto as <u>Attachment 5</u>.

83. Provide high resolution images for Petition Attachment 5, Figures 2, 3, 4, & 5.

RESPONSE: High resolution images are appended hereto as Attachment 6.

Facility Construction

84. Referencing Petition Site Plan GN-1, Site Plan Note 6, is contaminated soil expected at the site? Was a Phase I environmental assessment conducted for the Limit of Disturbance? If yes, what were the findings? Was a Phase II study recommended?

RESPONSE: FLL completed a Phase 1 Environmental Assessment ("ESA"). The ESA showed no concerns and a Phase II ESA was not recommended.

85. Referring Petition p. 11, it states construction will generate excess material; however, Site Plan T-1 indicates a net import of 2,252 cubic yards will be required. Clarify.

RESPONSE: The total permanent import of material on the site would be approximately 2,303 CY. The site would require approximate 845 CY of structural fill, 966 CY of gravel for the facility, 492 CY of gravel for the access road and an additional 146 CY of gravel for the temporary turnaround/staging area, which would be removed, post construction.

86. Referencing Petition Site Plan GN-1, several notes refer to the Town of Granby. Submit a revised plan.

RESPONSE: A revised Site Plan Sheet GN-1 is appended hereto as <u>Attachment 1</u>.

87. Would blasting be required to develop the site or stormwater features?

RESPONSE: FLL does not anticipate the need for blasting. If isolated bedrock is encountered, FLL expects that the removal of that isolated bedrock can be accomplished with excavators and hydraulic splitters/air rams as opposed to blasting.

88. Referencing Petition Attachment 5, the geotechnical report recommends a geotechnical engineer be on site during subgrade preparation. Does FLL intend to follow this recommendation?

RESPONSE: Yes.

89. Referencing Petition Site Plan SP-1, the width of the temporary bridge is 15 feet. What is the width of the existing crossing that is spanned by the bridge? What grade preparation and/or fill is necessary to install the temporary bridge?

RESPONSE: The width of the existing gravel path on the crossing is 9 feet. FLL has conducted an evaluation of a modular bridge installation, and FLL anticipates, based on the height of the beam flanges for the bridge, the access way would ramp up by approximately 24 inches to the bridge deck from the adjacent ground. FLL would accomplish this through the use of crane mats and/or placed aggregate material. Based on FLL's most recent analysis and correspondence with the local Fire Department, FLL would maintain this bridge in place for the duration of the 20-year project life.

90. The site plans do not indicate when the temporary bridge will be removed. Clarify. Would ground restoration, regrading be necessary after removal?

RESPONSE: Please see response to Interrogatory No. 89. FLL would maintain a modular bridge for the duration of the project. After removal of the bridge, FLL would restore the original grade as part of decommissioning.

91. What studies were conducted to determine the existing crossing was not sufficient for heavy vehicles? What studies were conducted to determine the existing crossing is of sufficient width and structural capacity to allow for post-construction emergency vehicle access? Has the fire department commented on the existing crossing?

RESPONSE: FLL conducted a structural analysis of the existing crossing and determined that it would require significant augmentation and reinforcement to support the transport of a crane and BESF equipment to the site. As stated in response to Interrogatory No. 89, the modular bridge proposed in FLL's original filing as "temporary" is now proposed to remain in place for the 20-year life of the project. This would not only facilitate BESF construction but would allow the Fire Department flexibility in terms of emergency vehicle access to the BESF.

92. Would safety vehicle guide rails be installed along the existing crossing after the temporary bridge is removed?

RESPONSE: FLL would maintain the modular bridge for the duration of the project's lifespan. FLL has not yet finalized the design of the modular bridge. Some designs include guide rails and others do not. Regardless, FLL would ensure that the modular bridge meets all applicable codes for safety.

93. What is the grade of the access drive leading uphill to the access gate?

RESPONSE: 15 percent.

94. Petition p. 13 references landscaping; however, no landscaping is shown on the site plans. Clarify.

RESPONSE: FLL would re-seed disturbed areas post-construction.

95. Referencing Petition p. 10, when does FLL anticipate filing for a DEEP General Permit?

RESPONSE: Shortly after an approval by the Council.

Facility Maintenance/Decommissioning

- 96. 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?

RESPONSE:

a) The anticipated annual degradation would vary between just under 1 percent and 3 percent generally, with slightly higher anticipated degradation in the first year.

- b) Augmentation with a single BESF unit is currently projected in years 5 and 15, but would be based on actual operational data. The intent of augmentation is to ensure the capacity of the BESF does not fall below 19.96 MWh.
- c) The estimated cost of replenishment would depend heavily on lithium/BESF pricing at that time.
- 97. Referencing Petition p. 14, what minimum snow depth would require removal within the BESF compound? At what depth could snow block the airflow to the chiller and/or electronic compartments?

RESPONSE: FLL would conduct snow removal within the BESF compound as necessary to allow for regular preventative maintenance and to ensure that operation of system components is not impacted. The chiller and associated vents are located on the top portion of the units and therefore impact from snow should be minimal.

98. At what time intervals would the transformers, inverters and switchgear need replacement?

RESPONSE: FLL anticipates the possibility for select inverter repair or replacement between years 10 and 20. Transformers and switchgear should not need replacement during the 20-year project life.