



MEMORANDUM

26015/Worthington Planning Board Solar Peer Review

DATE: June 17, 2026
TO: Bart Niswonger, Chair, Worthington Planning Board
FROM: Pare Corporation/Hallam ICS
RE: Technical Memorandum – Peer Review #3, ERP & HMA

Pare Corporation submitted a technical memorandum to the Town of Worthington Planning Board which led to the promulgation of a series of questions from Worthington Fire Department and the Planning Board to the Applicant. The Applicant responded on May 21, 2026. The initial questions, (in black), the Applicants response (in blue) and Pare's reply to the Applicants response below, (in red).

1. Comments/Clarifications for draft HMA

2. HMA draft indicates that BESS will most likely be Lithium Iron Phosphate (LFP) chemistry & related technology, which is the apparent current industry standard, but still subject to changing market conditions. HMA draft indicated that on-site fire protection water supply is not required for LFP BESS per NFPA 855 §4.13.

a. Besides the BESS, WFRD has concerns about water availability at the site for BESS-involved exposure protection, other electrical equipment or Solar Array / tracking mechanism issues. This needs to be further discussed.

BW Response: Per HMA Section 4.1.5, manual fire suppression is not required to suppress a SB3 fire. For solar tracking mechanisms, power consumption can be either battery (self-powered) or grid-powered. Please see illustrative tracking specification sheet provided as Appendix B to our 10/21/25 Response to comments. BlueWave utilizes the most efficient and current equipment, and as such, final tracker selection with power consumption mechanism is dependent on market conditions and supply constraints at procurement. Final selections are therefore typically finalized during the building permit phase. We have no objection prior to applying for building permit addressing this comment with WFRD and providing the Building Inspector with all documented communications with WFRD and summary of actions taken by the applicant in response to concerns or requirements identified by WFRD.

6/16/2026 Acknowledged. The remaining question is where the water to cool the nearby equipment would be sourced and the quantity required. Based upon initial

discussion with the Fire Department, it appears a source of 5000 gallons is preferred by the Fire Department.

4. As part of the design phase, or prior to the Construction Phase, WFRD requests that BWC / Fire Risk Alliance consultant provides (via paid subscription, as necessary) electronic, searchable versions of each of the NFPA, MA CMR, UL or other documents defined in these docs. This list may be amended as needed in the design & construction/installation or other phases of this project.

BW Response: 527 CMR and NFPA 1 are provided for free here: Massachusetts Fire Code Mass.gov. NFPA 855 cannot be shared due to copyright infringement, though we have no objection to a condition on the site plan approval requiring applicant to purchase NFPA855 on behalf of the Fire Department prior to building permit issuance.

6/16/2026 In addition to the free resources listed above, all NFPA standards are available to view online by creating a free account on NFPA.org. Additional information can be found at <https://www.nfpa.org/for-professionals/codes-and-standards/list-of-codes-and-standards/free-access>. These standards, while free to view, are not searchable or available for download without a paid subscription.

5. HMA §2 provides detailed description of (2) SolBank 3.0 (“SB3”) cabinets manufactured by e-STORAGE of Canadian Solar. HMA §3 provides details of SB3 testing per UL 9540A at the cell, module, rack and cabinet level, including various monitoring and protective control features.

a. BESS unit has environmental ratings including normal equipment operating temperature range, etc. WFRD requests an assessment of seasonal environmental conditions at this elevated site (e.g., predominant wind speeds/directions, peak/avg snowfall accumulations, peak/avg rainfall, etc.). This has impacts on any potential firefighting or suppression activities, including impacts to nearby BESS exposures (power conversion equipment, AC or DC switchgear, array & tracking mechanisms etc.) Also want an assessment of worst-case environmental conditions as compared to the environmental control system (HVAC) capabilities within the BESS unit.

BW Response: Per Section 7.3.3 of the HMA, the average peak ambient temperature in Worthington, MA is 82°F (28°C) and occurs in July. The peak temperature is less than the cell venting temperature 399°F (203.7°C); therefore, failure of the cooling system is not anticipated to lead to a thermal runaway event. Also, manual fire suppression is not required to suppress a SB3 fire per HMA Section 4.1.5. .

6/16/2026 The seasonal assessment adequately addresses the worst-case environmental conditions as compared to the environmental control systems. No consideration has been described for predominant wind speed/direction, or site-specific wind and snow.

6.The HMA addresses several failure modes associated with the BESS units themselves.

a. WFRD requests similar detailed Failure Mode assessment of all other electrical or electromechanical equipment at this installation (Solar Array panels, mounts, tracking mechanism/system; power conversion equipment; switch gear, etc.)

BW Response: BlueWave utilizes the most efficient and current equipment, and as such, final equipment selection is dependent on market conditions and supply constraints at procurement. Final selections are therefore typically finalized during the building permit phase. We have no objection prior to applying for building permit addressing this comment with WFRD and providing the Building Inspector with all documented communications with WFRD and summary of actions taken by the applicant in response to concerns or requirements identified by WFRD.

6/16/2026 Response by BlueWave meets the requirements of the by-laws. The Planning Board has the option of placing a condition on a potential Site Plan Approval requiring the Building Department and Fire Department review the details of the equipment submitted as part of the building permit application and request an expanded Failure Modes assessment including the remaining equipment to be detailed at the Building Permit phase.

7. HMA §2 defines BESS Thermal Management System (TMS), Battery Management System (BMS), Fire & Gas detection systems, Electrical Fault Protection, Fire Alarm Control Panel (FACP), Energy Management System (EMS) etc.

a. WFRD requests additional info (and perhaps a matrix that captures) at what point are any alerts or alarms generated, automated actions taken, and local and remote/off-site alerts/alarm provided to external monitoring company and eventually WFRD 9-1-1 Dispatch center? What is the communications method. How can these be periodically tested & exercised?

BW Response: Intrinsic aspects are explained in SB3 User Manual (see HMA Section 1.3). Site aspects shall be determined within prospective fire alarm system drawings.

6/16/2026 BlueWave has cooperated in the development of an Emergency Response Plan. The request for inclusion of these details in the ERP should be included in this process or can be added as a request to be added at the Building Permit phase.

b. As this site is at decent elevation and subject to seasonable lightning storms, request more details, including any required Lightning Protection Systems (LPS) for the entire installation and equipment. Related, what are the details of the BESS cabinet, internal electronic/electrical equipment, and external equipment pad electrical equipment for grounding to Earth Ground? What are the arrangements/provisions for a ground grid on site?

BW Response: The site and equipment pad includes grounding. This layout is determined in the building permitting phase in the electrical design. We have no objection to a condition on the site plan approval requiring electrical design drawings be provided prior to building permit issuance.

6/16/2026 Response by BlueWave meets the requirements of the by-laws.

c. Per HMA, SB3 can be provided with optional internal suppression systems that will not be implemented for Worthington installation. This needs further discussion.

BW Response: Per HMA Section 4.1.5, manual fire suppression is not required to suppress a SB3 fire.

6/16/2026 Response by BlueWave meets the requirements of the by-laws. As discussed in the Worthington peer review memo 2, the Planning Board has the option of placing a condition on a potential Site Plan Approval requiring the Building Department and Fire Department review the details of the equipment submitted as part of the building permit application, and determine if the proposed equipment compared to the equipment information furnished to the Planning Board as part of the approval is materially different. If the Fire Department or Building Department determine that the change in equipment is materially different, the matter must be presented back to the Planning Board for further review and approval of the proposed equipment, which may include the requirement for fire suppression.

9. HMA §4 defines the Ridge Road BESS site, including remote monitoring & emergency notifications, periodic maintenance, security features, and the Fire Alarm & Notification System. WFRD requests additional information and discussion on these topics.

a. Fire Alarm & Notification System drawings and details are not yet provided, to be developed in design phase. WFRD requests the schedule as to when town entities & WFRD can review these details in enough time to effect any required changes or recommendations. Emergency Stop (E-Stop) features and coordination with the site and Utility (Eversource) also need discussion.

BW Response: Detailed drawings regarding fire alarm & notification systems will be finalized prior to filing for a building permit. We have no objection to a condition on the site plan approval requiring that fire alarm and notification systems drawings be provided prior to building permit issuance.

6/16/2026 BlueWave response on fire alarm & notification details meet the requirements of the by-laws. Pertaining to e-stops, however, all means of shutting down the solar photovoltaic installation shall be clearly marked and approved by the Town fire chief as part of the special regulations in the zoning by-laws.

10. HMA §5 covers Site Design Code Analysis — WFRD has comments for further discussion.

BW Response: We have no objection prior to applying for building permit addressing this comment with WFRD and providing the Building Inspector with all documented communications with WFRD and summary of actions taken by the applicant in response to concerns or requirements identified by WFRD.

6/16/2026 BlueWave has provided all required documents listed in the Site plan Review section of the LSGMSPI portion of the by-laws. The fire department has the option of placing a condition on a potential Site Plan Approval requiring BlueWave to provide a Site Design Code Analysis that the Building Department and Fire Department would review as part of the building permit application.

12. HMA §7 covers this draft Hazard Mitigation Analysis (HMA). WFRD has comments, including that the HMA should be expanded beyond the BESS, to include any main failure modes of the array tracking system/mechanisms (batteries/technology, motor drives, controllers, linkages etc.); power conversion & distribution equipment (transformers, inverters, AC & DC switchgear, utility POI), and all the associated monitoring alarm systems (local and remote).

BW Response: BlueWave utilizes the most efficient and current equipment, and as such, final equipment selection is dependent on market conditions and supply constraints at

procurement. Final selections are therefore typically finalized during the building permit phase. We have no objection prior to applying for building permit addressing this comment with WFRD and providing the Building Inspector with all documented communications with WFRD and summary of actions taken by the applicant in response to concerns or requirements identified by WFRD.

6/16/2026 Identification of specific equipment is typically done at the time the building permit is sought. The Planning Board has the option of placing a condition on a potential Site Plan Approval requiring that a completed Hazard Mitigation Analysis and Emergency Response Plan be submitted and approved by the Fire Department prior to the issuance of a building permit.

a. WFRD requests BWC/FRA to provide info & procure AHJ-reviewed/approved combustible gas detectors, toxic gas detectors, or other as needed, including site-specific training, to ensure safe working environment when approaching or working around an incident for the BESS or other installation equipment.

BW Response: Once final equipment is procured, at building permit filing, a list of all detectors can be provided. We have no objection to a condition on the site plan approval requiring that a list of detectors be provided prior to building permit issuance. For illustrative purposes, the SolBank 3.0 is equipped with smoke detectors, heat detectors, H2 detectors, a fire alarm control panel, a sound and light alarm, an alarm bell, an emergency start/stop button of the fan and two emergency stop buttons. If any of the detectors are tripped, the fire alarm control panel initiates mitigation measures, including activation of the fire alarm, stop charging/discharging, and activation of the ventilation system. Applicant will provide training to the fire department, which can be included as a condition to the site plan approval. We also have no objection to a condition to the site plan approval requiring applicant to contribute \$7,500 to WFRD for procurement of detection equipment prior to a project commercial operation date.

6/16/2026 Response by BlueWave meets the requirements of the by-laws. The two suggested conditions appear to be reasonable.

2. Comments/Clarifications for draft ERP

1. ERP §I defines a phone # (TBD) for a Remote Operations Center (ROC) — when will this phone # be defined? WFRD comments provide info for local 9-1-1 Emergency Dispatch center, other WFRD related state agency emergency lines, and local hospital info.

BW Response: Contact details on the ERP are typically finalized during the building permit application phase. We have no objection to a condition on the site plan approval requiring that contact information be provided prior to building permit issuance.

6/16/2026 Response by BlueWave meets the requirements of the by-laws. The suggested condition appears reasonable.

2. ERP §3 defines several Mitigations: - WFRD has comments for further discussion.
a. 3.2.2 Fire Alarm & Detection System - When can we expect details regarding Alarm System connection to remote/off-site monitoring system/company & local 911 Dispatch Center for WFRD?

BW Response: Notification sequencing and monitoring capabilities will be included on the final ERP, typically finalized during the building permit application phase. We have no objection to a condition on the site plan approval requiring that contact information be provided prior to building permit issuance.

6/16/2026 Response by BlueWave meets the requirements of the by-laws.

b. .2.3 Fire Protection Water Supply — beyond just the BESS, WFRD wants to discuss suitable water source onsite for the entire installation (e.g., solar array & tracking system; BESS & nearby exposures; power conversion equipment).

BW Response: Per HMA Section 4.1.5, manual fire suppression is not required to suppress a SB3 fire. In areas without an established municipal water supply, NFPA 1142 rural water supply requirements are often acceptable. We have no objection prior to applying for building permit addressing this comment with WFRD and providing the Building Inspector with all documented communications with WFRD and summary of actions taken by the applicant in response to concerns or requirements identified by WFRD.

6/16/2026 We recommend to Worthington planning board and Worthington Fire Department that the applicant is not bound by MA fire codes and NFPA standards to provide a "code compliant" fire water supply, but that the AHJ has ability to request water provisions, if they deem prudent. The planning board may add a condition of Site Plan Approval indicating that the fire chief and applicant shall review the water supply requirements as part of the building permit application. This would allow the chief and applicant to discuss water provisions to spray water on photovoltaic or other non-BESS equipment in the design.

c. (misabeled as [a] in BW response) .3.5 Emergency Stop functions — WFRD wants more discussion on physical & remote E-Stop functions.

BW Response: E-stop locations will be included on the final ERP, typically finalized during the building permit application phase. We have no objection to a condition on the site plan approval requiring that contact information be provided prior to building permit issuance.

6/16/2026 All means of shutting down the solar photovoltaic installation shall be clearly marked and approved by the Town fire chief as part of the special regulations in the zoning by laws.

3. (misabeled as [1] in BW response) ERP §4 defines several Preparedness actions for Chemical and other Hazards - WFRD has comments for further discussion.

a. WFRD requests BWC to provide info & procure AHJ-reviewed/approved suitable multi-gas meters (that cover H₂, CO, or other possible explosive/flammable or toxic byproducts), as well as provide periodic site-specific training.

BW Response: 4-gas meters typically carried by most fire departments are expected to be sufficient for initial air monitoring, as the main gases found in UL 9540A cell-level testing for LFP batteries are hydrogen (LEL), hydrocarbons (LEL), carbon dioxide, and carbon monoxide, all of which can be measured using a 4-gas meter. It is not expected that any of these products of combustion would be found outside the 100 ft. exclusion zone, but if they are present, it would inform the fire department that monitoring further from the site would be necessary. We have no objection to a condition to the site plan approval requiring applicant to contribute \$7,500 to WFRD for procurement of detection equipment prior to a project commercial operation date.

6/16/2026 Response by BlueWave meets the requirements of the by-laws. The proposed condition appears reasonable.

b. WFRD requests BWC/FRA to provide info & procure AHJ-reviewed/approved decontamination equipment/supplies that may be needed for chemicals, toxins or other incident byproducts that may occur at this site. WFRD requests BWC fund and provide AHJ-approved decontamination equipment/supplies, as well as provide periodic, site-specific training.

BW Response: It is not expected that decontamination would be necessary outside of normal procedures for any fire — many of the gases produced during thermal runaway are of a similar character to a house or vehicle fire.

6/16/2026 Response by BlueWave meets the requirements of the by-laws.

c. WFRD requests consideration of installation (size, location TBD with WFRD, BWC, FRA, Town consultants) of an additional Structure for containment of FF suppression agents (water foam etc.) and related incident “run-off” below & around BESS and electrical equipment pads. Essentially a waterproof “bathtub enclosure” under all key electrical elements at risk of fire & related suppression/exposure operations. Goal to contain any “run-off” (i.e., fire byproducts/toxins / contaminants) from entering the ground water/aquifers, nearby well systems, or other protected water supplies.

BW Response: NFPA 855 and the ICC specifically exempt lithium-ion batteries from spill control and neutralization requirements, as lithium-ion batteries do not contain any liquid that could spill from the container. Our recommended tactics are to allow a BESS fire to self-consume and to not apply water, which would eliminate the need for any possible runoff containment in the unlikely event that the runoff would contain any contaminants. Exposure cooling efforts on non-affected equipment would be similar to rain filtering over the unaffected equipment, and there is no real possibility of contamination occurring from this effort.

6/16/2026 Response by BlueWave meets the requirements of the by-laws.

d. ERP §4.6 & 5.1 state BESS SME, equipment owner, site operator, and Remote Operations Center (ROC) have critical roles guiding FD & other responders for BESS/site emergencies. WFRD requests detailed 24/7 contact info (names, phone #, emails, etc.) for each of these interfaces, primary & backup.

BW Response: Contact details on the ERP are typically finalized during the building permit application phase. We have no objection to a condition on the site plan approval requiring that contact information be provided prior to building permit issuance.

6/16/2026 Response by BlueWave meets the requirements of the by-laws. The proposed condition appears reasonable.

3. (misabeled as [2] in BW response) ERP §5 defines several Response actions - WFRD has comments for further discussion.

a. §5.1.7 defines exposure assessment using thermal imager cameras (TICs) at a stand-off range of > 100feet. WFRD requests info on TICs that can reliably detect temperatures at that range for incident-involved equipment or exposures. WFRD may

request BWC procure AHJ-approved suitable TIC for this site. Other comments address air quality monitoring.

BW Response: The effective range of many fire department thermal imaging cameras (TICs) is up to 150 ft. Exposure assessment can be done using a TIC at a range of 100 ft to determine temperature trends of exposed equipment to successfully accomplish this tactic. We have no objection to a condition to the site plan approval requiring applicant to contribute \$7,500 to WFRD for procurement of detection equipment prior to a project commercial operation date.

6/16/2026 Response by BlueWave meets the requirements of the by-laws. The proposed condition appears reasonable.

b. §5.3 & 5.4 define electrical equipment failures. WFRD requests discussion on BWC providing AHJ-approved Class B & C extinguishers stored on site & accessible for WFRD.

BW Response: Any approved extinguishing agents, depending on the hazard for the type of equipment, can be utilized to suppress these fires. These are agents commonly carried by fire departments on apparatus.

6/16/2026 Response by BlueWave meets the requirements of the by-laws. Storage on site of extinguishing agents would have to meet setback requirements which would not provide significant risk mitigation.

5. (misabeled as [3] in BW response) ERP §6 defines several Recovery plans & actions & states FD involvement is at discretion of the BESS SME, installation owner/operator. WFRD has comments for further discussion.

If the operators / BWC are off-site/remote, how long will it take to get to Worthington to coordinate recovery and overhaul efforts? If this is done by phone, WFRD requests detailed 24/7 contact info (names, phone #, emails, etc.) for each of these interfaces, primary & backup.

Will they be contacting approved recovery and clean-up crews, coordinating as needed with MA Department of Environmental Protection (MA DEP), others as may be required, etc.?

BW Response: Detailed phone numbers and contact information to be finalized when filing for a building permit. In the unlikely event of a waste spill, the State emergency response plan will be implemented, similar to an oil tank leak, there is a State response and liability on the owner of the tank to clean up the waste.

6/16/2026 Acknowledged.

a. WFRD needs to coordinate inputs to Town of Worthington ERP, with several Town entities & consultants to address proposed large-scale Solar/Bess installations.

BW Response: We have no objection prior to applying for building permit addressing this comment with WFRD and providing the Building Inspector with all documented communications with WFRD and summary of actions taken by the applicant in response to concerns or requirements identified by WFRD.

6/16/2026 Response by BlueWave meets the requirements of the by-laws.