Date: January 10, 2025

Emily Alspaw
Jupiter Power

Dear Emily:

Fire & Risk Alliance LLC (FRA) was contracted by Voyager Energy Storage LLC to perform a firefighting water supply analysis for the battery energy storage system (BESS) proposed for installation in Saline Township, Michigan. The proposed Voyager BESS is anticipated to include Hithium Gen 2 lithium-ion battery containers. The Voyager BESS is currently in the design phase and Jupiter is exploring options for firefighting water. Currently, there is no public water supply main from the local municipality along the public access road to the facility (Michigan Avenue).

1. APPLICABLE CODES, STANDARDS, AND REFERENCE MATERIALS

The following codes, standards, and reference materials were incorporated as part of the analysis:

- International Fire Code – 2021 Edition (IFC), as confirmed by the Saline Area Fire Department.
- Saline Township Zoning Ordinance Section 11.10 – Battery Energy Storage Systems.
- Michigan Building Code – 2015 Edition (MBC), based on the 2015 International Building Code, effective April 20, 2017.
- NFPA 22, Standard for Water Tanks for Private Fire Protection – 2018 Edition (NFPA 22).
- NFPA 24, Standard for the Installation of Private Fire Service Mains and Their Appurtenances - 2019 Edition (NFPA 24).
- NFPA 1142, Water Supplies for Suburban and Rural Fire Fighting - 2017 Edition (NFPA 1142).
- Voyager Battery Storage Facility with Gen-Tie Preliminary Site Plan – Drawing Set Dated 2024.12.19.

2. VOYAGER BESS AND SITE OVERVIEW

The Voyager BESS is anticipated to include Hithium energy storage containers. Each container is equipped with six BESS racks. Each rack contains eight battery modules. The total energy capacity of one container is 5,015 kilowatt hours. Groups of BESS containers are accompanied by inverter/medium voltage transformer skids and low voltage transformers. The containers are not occupiable. Access to the equipment installed inside the BESS is only provided through access doors on the front of the containers. Maintenance and service are performed by reaching into the container from the outside (through these access doors), similar to other electrical equipment cabinets, panels, or a transformer. Therefore, the containers are not defined by the MBC as a building.

The Voyager facility is accessible from Michigan Avenue to the south and is approximately 2,300 feet from the nearest energy container, as illustrated in Figure 1. There is no public water supply main or city hydrants installed on Michigan Avenue. An 8-inch underground fire service main is proposed to be installed within the BESS facility to provide firefighting water to the remote parts of the installation. The 8-inch underground fire service main will supply three dry, private hydrants for the facility. The non-potable, dry hydrant firewater main will drain to a detention basin. The proposed installation will also include a groundwater well designed to fill a 32,000-gallon non-potable firewater storage tank. The well system will be designed to actively refill the water tank as levels are depleted. The tank is approximately 27 feet in diameter with top of railing approximately 14 feet above the ground. Refer to Figure 2 for the location of the proposed fire protection features for the facility.

Figure 1. Voyager BESS Overall Site Layout

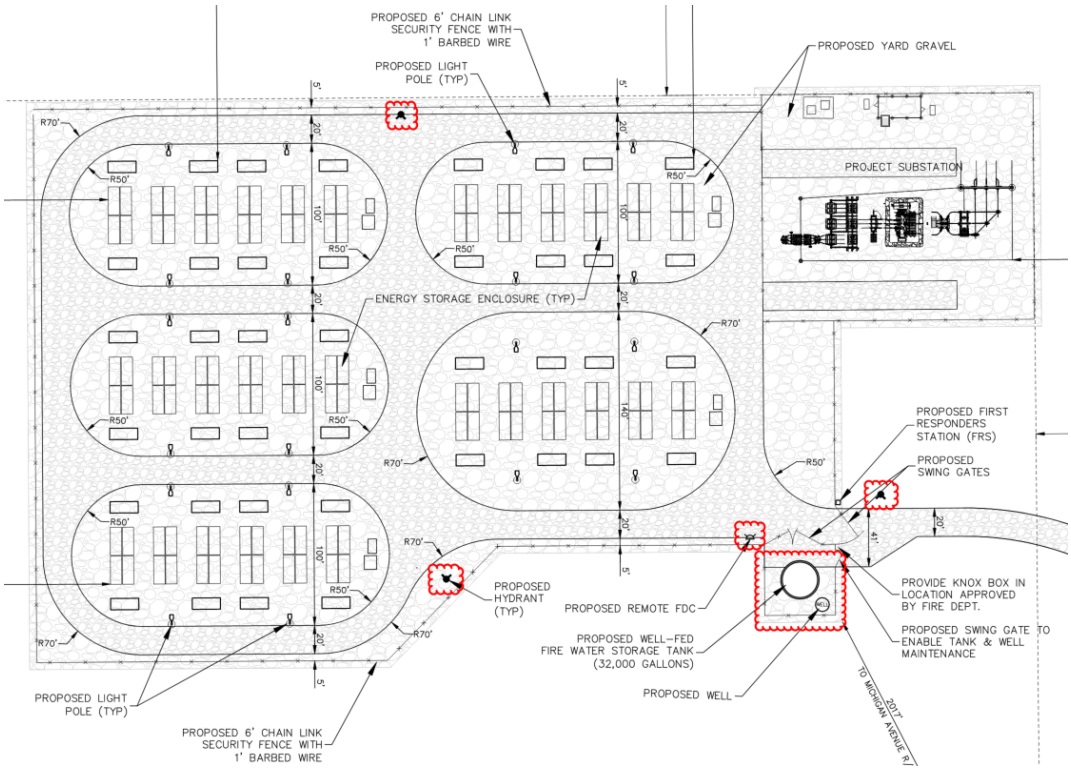


Figure 2. Voyager BESS Fire Protection Equipment

3. CODE REVIEW

The IFC requires an approved water supply capable of supplying the required fire flow for fire protection to be provided to premises on which facilities, buildings, or portions of building are hereafter constructed or moved into or within the jurisdiction [IFC §507.1]. Where a portion of the facility or building hereafter constructed or moved into or within the jurisdiction is more than 400 feet from a hydrant on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site hydrants and mains shall be provided where required by the fire code official [IFC §507.5.1]. The IFC states that the water supply shall consist of reservoirs, pressure tanks, elevated tanks, water mains, or fixed systems capable of providing the required fire flow; however, it does not discuss specific spacing and/or locations. Typically fire hydrants are supplied by a municipal water supply; however, in this instance, Jupiter is exploring an alternative configuration.

In place of connecting to a municipal water supply, Jupiter is proposing to provide a fire department connection (FDC) located within 100 feet of the firewater storage tank. The firewater storage tank will be outfitted with a connection for the fire department to draw water to their apparatus and supply site hydrants via the FDC. Private fire service mains and appurtenances shall be installed in accordance with NFPA 24, and water tanks for private fire protection shall be installed in accordance with NFPA 22. Since the fire hydrants provided in the BESS yard are only for use by the fire department, they will be used in a coordinated and planned approach with the BESS subject matter expert. It is believed that this manual-dry configuration would adequately support the expected fire department response to a fire event. For example, a single fire engine company could connect to the firewater

storage tank and supply firewater to the entire site. This engine company could then deploy a handline off a hydrant to provide exposure cooling.

The fire hydrants proposed in Figure 2 are spaced throughout the BESS yard to provide pre-installed fire water access to all parts of the yard. This approach is intended to streamline fire department response. If site fire hydrants were not provided, a relay operation would likely be required and would take longer to implement during an emergency.

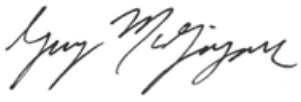
If a fire originates inside the Hithium container, offensive firefighting tactics utilizing handlines are not recommended. An Emergency Operations Plan (EOP) has been developed that includes guidance on appropriate exposure protection. Since offensive firefighting tactics will not be required per the EOP, the fire hydrants provided on site are for other exposure fires and can be used to cool nearby exposures, control the path of smoke, or extinguish any small vegetation fires.

4. CONCLUSIONS

Based on our review of the available materials, our background, experience, training, and the assumptions listed above, the following conclusions are submitted within a reasonable degree of scientific and engineering certainty:

1. Site fire hydrants should be provided for cooling exposures, controlling smoke, or extinguishing small vegetation fires during an Hithium BESS fire event without the need for deploying supply hoses throughout the yard.
2. The dry water service main utilized for private fire protection, supplied by a remote FDC, must be installed in accordance with NFPA 24, as required the IFC. Hydraulic calculations shall be conducted to show that the main can supply the total demand to the remote hydrant at the appropriate pressure.
3. The proposed firewater storage tank must be installed in accordance with NFPA 22, as required by the IFC. The groundwater well must be capable of filling the minimum required fire protection volume within the tank in a maximum of 8 hours, as required by NFPA 22. In addition, the tank must be heated to prevent freezing in accordance with Section 16 of NFPA 22.
4. The FDC shall be secured, installed in an accessible and approved location (within 100 feet of the firewater storage tank), and protected from mechanical damage.

Sincerely,



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