

Staff Report

Devens
Enterprise
Commission

Date: December 21, 2025
To: Devens Enterprise Commission
From: Neil Angus, FAICP, DEC Director,
RE: CFS-4 – 111 Hospital Road Site Plan Amendment Level 2 Unified Permit

Applicant/ Owner: Commonwealth Fusion Systems, LLC (CFS)
Engineer: VHB Engineering
Location: 111 Hospital Road, Devens, MA
Zoning: Innovation & Technology Business District, Watershed & Aquifer Water Resources Protection Overlay District

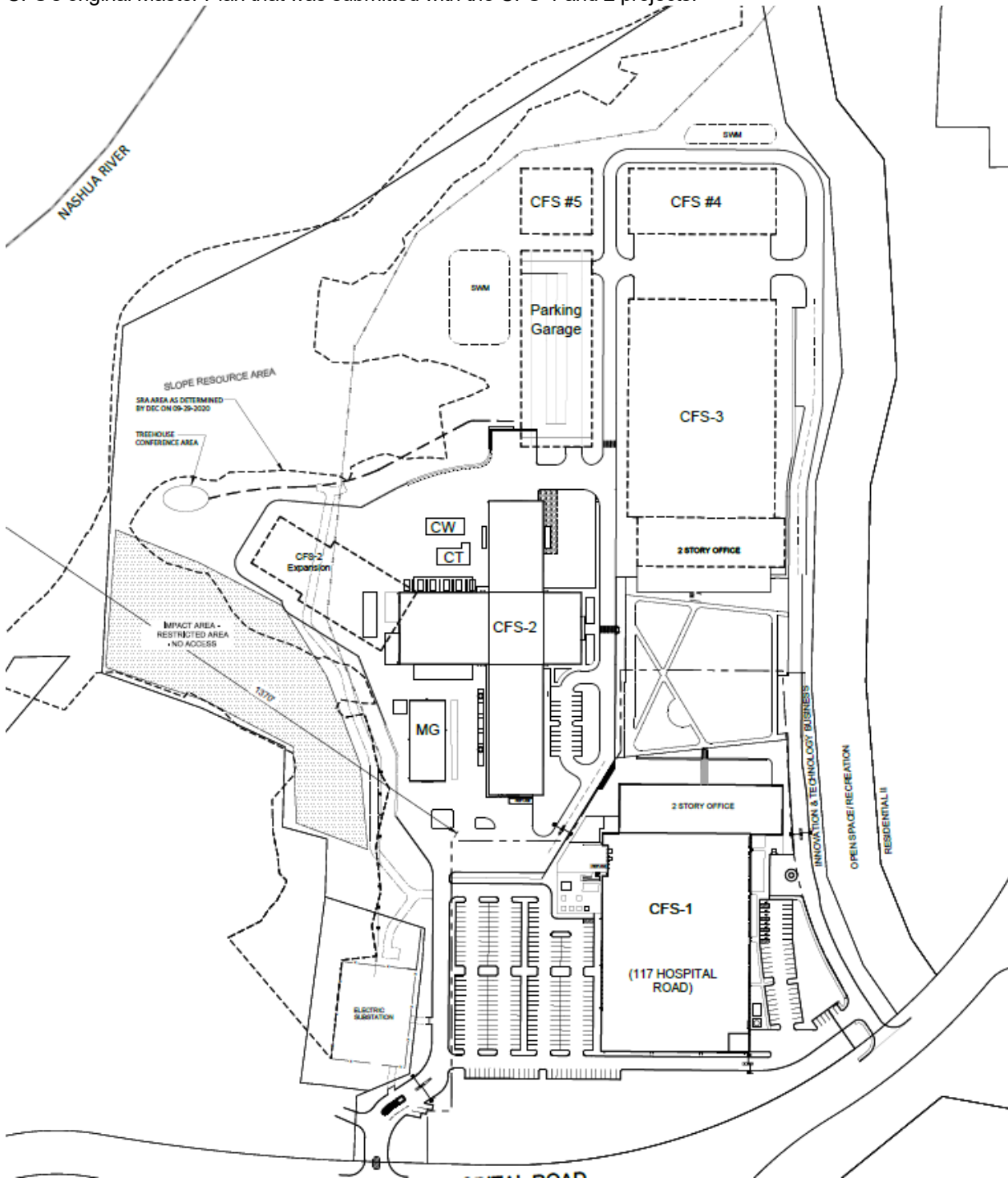
Project Overview:

CFS has submitted a Level 2 Unified Permit Application for the construction of a heat transfer research facility – referred to as CFS-4 (Flibe Thermal Loop facility or “FTL”), including new buildings, industrial furnaces, tanks, pumps and associated site improvements adjacent to (northeast) of existing Tokomak Hall (CFS-2):

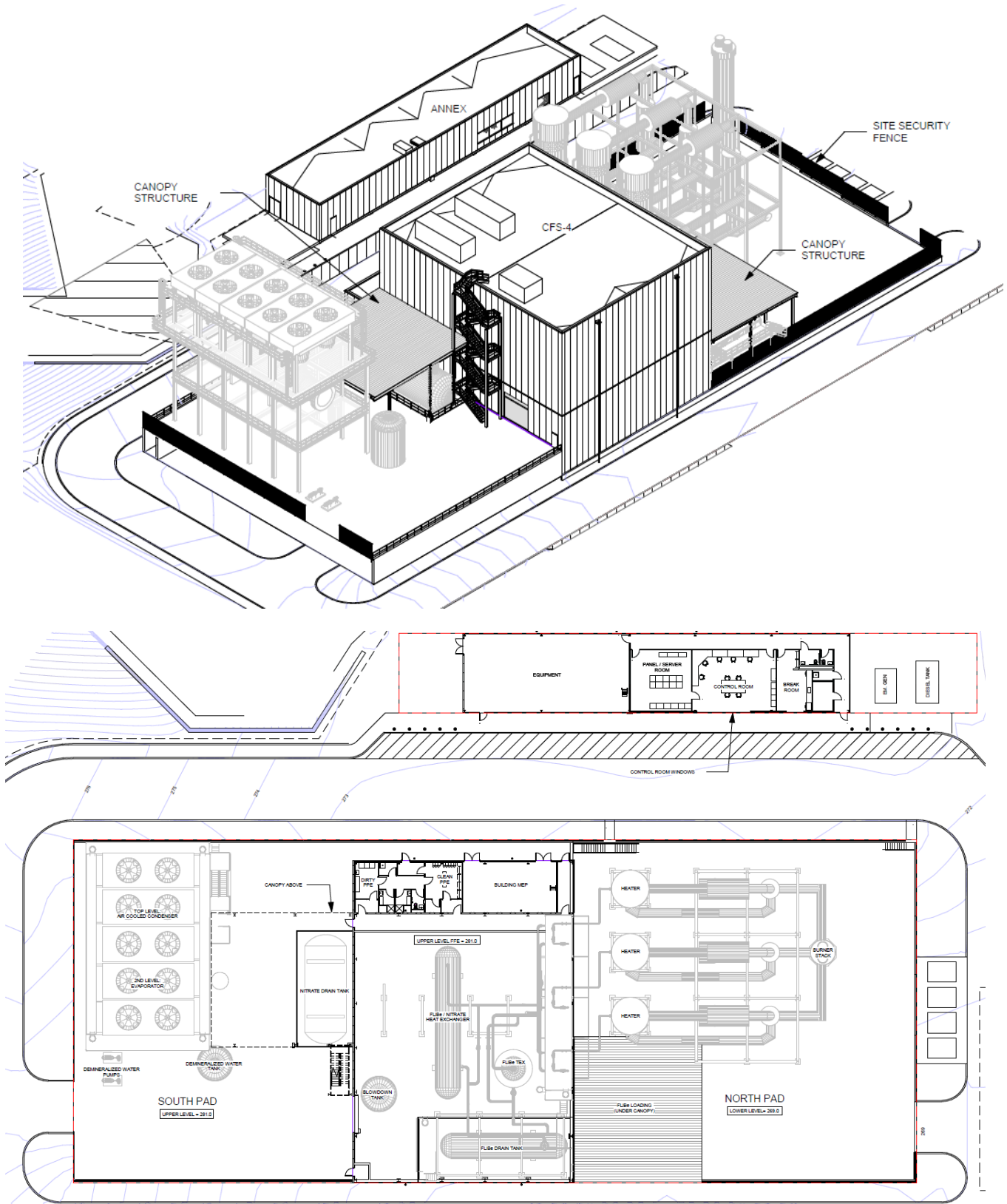


CFS-3 is a separate project that is not part of this application but shown here for context. It will include office, R&D and manufacturing space for more super conductor magnets as well as a 600-space parking garage structure. Design and construction of the CFS-3 and CFS-4 building sites are on independent schedules however, similar to CFS-1 and 2, both building sites will share access, utilities and amenities to function together as part of the CFS unified campus

masterplan. Reciprocal easements will be need to be created and/or modified between properties. This expands on CFS's original Master Plan that was submitted with the CFS-1 and 2 projects:



CFS-4 will be a highly specialized research facility consisting of industrial equipment, tanks, pumps, controls and buildings organized on large structural reinforced concrete pads. CFS-4 will include heat transfer experiments and research associated with harnessing and storing the heat energy produced by a fusion reaction. Large industrial gas-fired furnaces will simulate the heat source from the fusion reaction and direct it to the FLiBe Thermal Loop (FTL) of molten salts composed of Fluoride (F), Lithium (Li), and Beryllium (Be). Heat will be released from the loop through air cooled heat exchange systems.



CFS plans to commence construction on CFS-4 as soon as possible. Once completed, they plan to phase the start-up of the facility as follows:

1. Phase 1, initial deployment in April 2027: the facility will be deployed with only a single fired heater (out of a maximum of three) based on limitations in natural gas infrastructure.

2. Phase 2, starting no earlier than April 2028: deployment of the remainder of the natural gas heaters and operation of the facility at full capacity (periodic testing – not 24/7 operation).
3. Phase 3, starting no earlier than April of 2029 and ending in approximately 2033: Operation for targeted testing only.

Site issues at a Glance:

Staff, along with Devens Utilities, Engineering, Building, and Fire/Public Safety have been conducting preliminary meetings with the Applicant for the past several months to review plans as they developed in order to help ensure a complete submission. Once the formal application was submitted, staff circulated the application and supporting materials to all Devens departments, as well as DEC peer review consultants. The following is a summary of the review comments to date:
Site layout/operations

Air Emissions: The FTL system will include three, 21 MW heaters. These heaters are necessary to create the heat needed to prove out the thermal loop system. CFS is planning to construct and operate the heaters in concert with gas availability. The heaters are expected to operate over the 6-year period as follows:

2027: <30%

2028: <80%

2029 - 2033: < 20%

The heaters will run intermittently and there will be frequent down-time. CFS has applied for a Non-Major Comprehensive Air Quality Plan (NMCAQP) approval from MA DEP. Steps they are employing to mitigate emissions include using Best Available Control Technology (BACT) evaluation. The system will include Selective Catalytic Reduction (SCR) to control NOx emissions, an oxidation step to lower CO emissions, and tight operational control to optimize combustion efficiency.

The Applicant has conducted Air Dispersion Modeling indicating that the project will not result in any exceedances of the National Ambient Air Quality Standards. In addition, the Applicant indicates that this project meets the requirements to complete a Cumulative Impact Analysis (CIA). The CIA is required because the potential project emissions require a Comprehensive Air Permit and the project is located within 1 mile of an Environmental Justice Area in the Devens Regional Enterprise Zone within the historic boundaries of Ayer, MA. CFS and their air quality consultant have been working closely with MassDEP to ensure the application meets all requirements. While the emissions will be intermittent, the Applicant should explore the feasibility of carbon capture and any other options that would reduce the level of emissions from these processes. Because the process is using air cooling vs. water cooling, there should be no visible emissions from the stack or other equipment. The Applicant should confirm that this will be the case year-round. CFS does not expect any odors or dust emissions when the system is operational. During construction, the contractor will take measures to minimize construction noise and dust

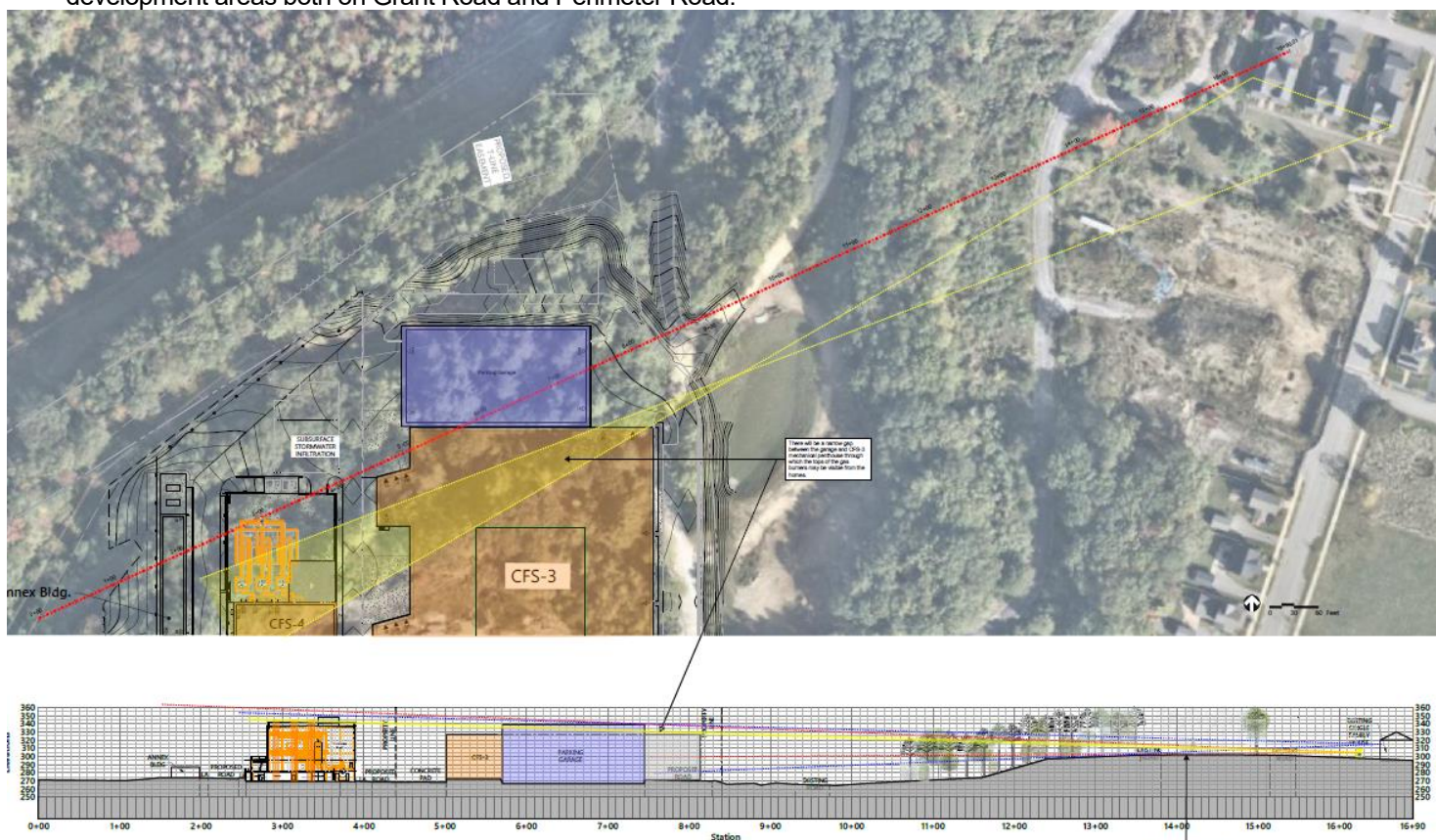
Sound Study: The Applicant submitted an initial sound study that only included the CFS-4 facility. DEC Peer review consultants have requested that the study include the entire campus as we need to review the cumulative impacts of sound from all existing and proposed sound sources. The Applicant submitted a revised sound study on November 19, 2025 that included CFS-4, as well as the proposed CFS-3 project, but did not factor in CFS-1 and 2 existing sound sources. As we await the submission of the full study, our consultants will review the CFS-3 and 4 modelling for input accuracy.

Traffic: A combined traffic report was submitted for both CFS-4 and CFS-3. While CFS-4 will require minimal parking, the existing parking situation at the CFS campus is of concern. The employee projections for CFS-1 and 2 were underestimated and that, combined with the number of contractors still on-site for CFS-2, is creating parking issues. Additional construction for CFS-4 and CFS-3 will add to these concerns. CFS has acquired additional land at 105 Hospital Road (former Oak housing area) and plans to utilize this area for construction laydown, however this area is currently already being used as temporary overflow parking for CFS-1 employees. They are also using satellite parking locations and shuttles to help reduce congestion on-site. The Applicant has provided a logistics plan for construction/operations, but will need to consider additional measures to safely accommodate and manage employee parking as well as construction parking and laydown. They should consider any and all options, including constructing the proposed above-ground parking garage as part of the CFS-4 project.

Lighting: Original proposed site lighting levels exceeded the allowable footcandle limits. The Applicant revised the plans to reduce lighting levels and implement a number of controls to further reduce the potential for light pollution. They include Dark Sky compliant fixtures, control/timing sensors, louvers/shielding to reduce backlight, glare, and visible brightness from abutting residents. See Applicant's response to DEC comments dated 11-18-25 and revised plan set for additional measures that will be implemented.

Public Health and Safety: Devens Fire Department has been reviewing plans and are comfortable with proposed site circulation and access. They are consulting with the State Fire Marshall's Office on the excising and proposed storage of chemicals to ensure safety and security is factored in. The amount of gas and processing that is being proposed has to be considered cumulatively across the whole campus. It is unclear if a license for flammables and combustibles will be required but if it is, the Applicant will need to come back to the DEC in a separate application. Staff has requested additional information on the safeguards that will be in place for these high heat operations to prevent any meltdowns, explosions, or other safety issues with equipment and personnel as they experiment with high heat transfer and storage.

Visual Impact Analyses: The applicant has undertaken a series of visual impact analyses from existing and future development areas both on Grant Road and Perimeter Road:



Cross sections show that preserving the existing woodlands between these areas and the site to the maximum extent practicable will be very important. There is an existing 100' open space buffer between all residentially zoned lands and this site which will help ensure protection of that screening. DEC staff have requested that the Applicant also provide photo simulations to assess the degree to which existing vegetation will fully or partially screen the CFS-3 project. The applicant is also identifying mature trees around the limits of clearing on-site that can be preserved to aid in screening. Replanting where feasible will also be important. The future CFS-3 building will screen the majority of CFS-4 from the Grant Road residential area and it will have a little more area for additional landscaping that can help enhance the 100' buffer.

Waivers:

The Applicant has requested the following waivers from the DEC Rules and Regulations:

974 CMR 3.06.3.(b) Slope Resource Area (SRA) Setbacks: There shall be no Site Disturbance within the 35' Buffer Area beyond the 15' No Disturbance Area, unless the DEC makes a finding that the proposed activity will have no adverse impacts on the structure and stability of the SRA and 15' No Disturbance Area.

The Applicant is requesting limited work within the 15' No Disturb zone of a SRA. The 15' No Disturb zone where grading is proposed is the back side of a small hill on the opposite side of the protected SRA. A final geotechnical report has been submitted and is being reviewed by our peer review engineers.

974 CMR 3.02.3.(b)6.a requires existing wooded areas and trees to be preserved to be shown, as well as all "specimen trees" (trees exceeding a minimum caliper of 12") within 100' of existing or proposed lot lines.

The Applicant is requesting a waiver from having to show all 12" trees within 100 feet of the property boundary. Staff has requested the Applicant identify trees 12" caliper or greater along the limits of disturbance that abut the north and east boundaries of the parcel. Preservation of vegetation in these areas is important for maintaining the existing vegetative screening between existing and future residential developments in the Grant Road area adjacent.

974 CMR 4.11.2.(c) Projects that require a MassDEP Air Quality Permit shall have a roof for which at least thirty (30) percent shall be vegetated, which vegetated portion shall comply with the DEC's Policy for Construction of Vegetated Roofs, dated August 2011, as amended.

The Applicant is requesting a waiver of the green roof requirement. The roofs have to be solar ready to meet current building code and there is concern about plant survival due to temperature extremes from this process. Staff would not support this waiver request. It is a requirement that was approved through the MA Environmental Policy Act Office as an acceptable mitigation requirement under a previous Notice of Project Change for Devens. If the FTL buildings are unable to accommodate the required green roof area, there is ample roof space on the existing SPARC facility where this requirement could be satisfied.

Process:

VHB, on behalf of Commonwealth Fusion Systems, LLC., submitted the Level 2 Unified Permit Application on October 2, 2025, and the Determination of Completeness was issued on October 9, 2025. Copies of the application were received by the surrounding Towns on October 14, 2025. Legal notices were placed in Nashoba Publications on October 31 and November 7, 2025. All abutting property owners were duly notified by certified mail on October 14, 2025. The 30-day Town comment period expired on November 14, 2025. No comments were been received other than those from MassDevelopment and our Peer Review Consultants. The 75-day review period for the DEC to act on this application ends on December 24, 2025.

Recommended Action:

The Applicant is still working on a number of items that will need to be submitted and reviewed prior to the DEC closing the hearing and acting on this application. Staff recommends the hearing be continued to the December 4, 2025 meeting at 7:30AM OR the December 16, 2025 meeting at 6:45 PM to allow the Applicant additional time to submit responses, as well as allow our consultants adequate time to review everything, and if appropriate, time for Staff to draft a Record of Decision for the Commission's consideration once the hearing closes.

Attachments:

- [Application](#)
- [Cover Letter](#)
- [Site Plan](#)
- [Stormwater Management Report](#)
- [Determination of Completeness](#)
- [Public Hearing Legal Notice](#)
- [Revised Plans, supporting materials and response to comments from Applicant 11/18/25](#)