

# DRAFT

**Petition No. 1554  
HyAxiom, Inc.  
University of Hartford  
200 Bloomfield Avenue, West Hartford; and 202 Bloomfield Avenue, Hartford, Connecticut**

**Staff Report  
March 10, 2023**

## **Introduction**

On December 16, 2022, the Connecticut Siting Council (Council) received a petition from HyAxiom, Inc. (HyAxiom) for a declaratory ruling, pursuant to Connecticut General Statutes (CGS) §4-176 and §16-50k, for the installation of a 1.84 megawatt (MW) fuel cell facility at the University of Hartford located at 200 Bloomfield Avenue, West Hartford; and 202 Bloomfield Avenue, Hartford, Connecticut (Petition or Project).

HyAxiom provided plans to wetlands and zoning officials for the City of Hartford (City) during 2021 and 2022.

On December 16, 2022, HyAxiom provided notice of the Project to abutting property owners and the City Mayor. No comments were received.

On December 20, 2022, the Council sent correspondence to the City and the Town of West Hartford (Town) (collectively, the Municipalities) stating that the Council has received the Petition and invited the Municipalities to contact the Council with any questions or comments by January 15, 2023. The Council has not received any comments to date.

Also on December 20, 2022, pursuant to Regulations of Connecticut State Agencies (RCSA) §16-50j-40, the Council notified all state agencies listed therein, requesting comments regarding the proposed project be submitted to the Council by January 15, 2023. No comments were received.

On December 21, 2022, the Council sent correspondence to HyAxiom noting a deficiency in the completeness of the Petition. Specifically, proof of service of the Petition to City officials, Town officials and state officials and agencies was not provided to the Council. On January 30, 2023, HyAxiom submitted proof of service. On February 1, 2023, the Council rendered the Petition complete. No comments were received from the City, Town or state officials or agencies.

The Council issued interrogatories to HyAxiom on February 21, 2023. HyAxiom provided responses to the Council's interrogatories on March 3, 2023.

Pursuant to CGS §4-176(e) of the Uniform Administrative Procedure Act, an administrative agency is required to take action on a petition within 60 days of receipt. On February 2, 2023, pursuant to CGS §4-176(e), the Council voted to set the date by which to render a decision on the Petition as no later than June 14, 2023, which is the 180-day statutory deadline for a final decision under CGS §4-176(i).

### **Public Benefit**

The project would be a “customer-side distributed resources” facility, as defined in CGS § 16-1(a)(49). CGS § 16a-35k establishes the State’s energy policy, including the goal to “develop and utilize renewable energy resources...to the maximum practicable extent.” The proposed facility is a distributed generation resource and will contribute to fulfilling the State’s Renewable Portfolio Standard as a low emission Class I renewable energy source. The project was selected as part of the Low and Zero Emissions Renewable Energy Credit (LREC/ZREC) program. The facility would be installed by HyAxiom and owned, operated and maintained by Doosan Energy Services America, Inc. under a 15-year power purchase agreement with the University of Hartford.

### **Project Site**

The proposed facility is located on a 350-acre parcel owned by the University of Hartford. The parcel is zoned MX-2, Campus Overlay Area and developed with campus buildings and parking areas. The facility would be located within a parking area in the eastern-central portion of the campus approximately 121 feet to the east of the East Hall academic building.

The municipal boundary between Hartford and West Hartford is approximately 1,000 feet to the west of the Project site. The nearest off-campus residence to the Project site is located at 207 Bloomfield Avenue in West Hartford, approximately 1,500 feet to the southwest. The nearest off-campus residential property line is located at 201 Bloomfield Avenue, West Hartford or 309 Granby Street in Hartford. These residential property lines are located approximately 1,394 feet to the southwest and east, respectively.

### **Proposed Project**

The facility would consist of four 460-kW HyAxiom PureCell Model 400 fuel cell power modules that utilize a non-combustion phosphoric acid technology that interacts with natural gas to generate electrical power. The amount of phosphoric acid complies with applicable state and federal regulations.

The proposed facility would be a customer-side, distributed resources project, designed only to provide electricity. The facility would operate in parallel with the utility grid and would provide approximately 60 percent of the university’s electrical load. Any excess electricity generated by the facility would be exported to the local electric grid under the net metering tariff. Although it is not presently designed to utilize waste heat, the facility could be retrofitted to utilize the waste heat in the future.

The facility would be installed on an existing 108-foot by 58-foot concrete pad located within a fenced compound. The fuel cell power modules are each approximately 29 feet 4 inches long by 8 feet 7 inches wide by 10 feet tall. A total of four cooling modules would be installed each with dimensions of approximately 16 feet long by 7 feet 10 inches wide by 6 feet high. The fuel cell facility would be enclosed by an 8-foot high black vinyl chain-link fencing with black privacy slats. A 35-square foot natural gas service and meter pad would be installed outside of the fenced compound, near the southeastern corner. Bollards would be installed to protect the meter pad.

A 4.8-kV electrical interconnection would run underground to the west and connect to existing switchgear within an on-campus university-owned substation located north of East Hall. The facility’s water connection would run underground to the southwest and connect to existing water service within the East Hall building. The facility’s natural gas connection would be provided via new service that would run underground in a southerly direction from the meter pad.

The fuel cell has an operational service life of 20 years; however, a component overhaul or replacement would be required after 10 years. At the end of the 20-year operational life, the fuel cell units and associated equipment would be dismantled and removed.

Project construction is expected to begin in early 2023 and continue over a 20 week period. Construction hours would be between 8:00 a.m. to 5:00 p.m. Monday through Friday.

The estimated cost of the facility is \$1.5M.

### **Environmental Effects and Mitigation**

The fuel cell facility would comply with all applicable Department of Energy and Environmental Protection (DEEP) water quality standards as no water would be consumed or discharged once the facility is operational. The proposed fuel cell facility would have virtually no water usage or discharge. Water consumption would only occur at system fill and makeup water. Minimal discharge of de-ionized water would occur in rare instances.

Air emissions produced during fuel cell operation would be below DEEP applicable limits for a new distributed generator, as shown below, and thus, no DEEP air permit is required.

| Fuel Cell Facility |                                      |
|--------------------|--------------------------------------|
| Compound           | Fuel Cell Facility (lbs/MWh)         |
| NO <sub>x</sub>    | 0.02                                 |
| CO <sub>2</sub>    | 496<br>With waste heat recovery      |
| CO <sub>2</sub> *  | 1,006<br>Without waste heat recovery |

\*DEEP amended its regulations in 2016 to eliminate the CO<sub>2</sub> permit requirements from the New Source Review and Title V Programs as a result of a United States Supreme Court decision that overturned states' regulatory CO<sub>2</sub> permit requirements (*Utility Air Regulatory Group v. U.S. Environmental Protection Agency*, 573 U.S. 302 (2014))

The proposed facility would emit no methane (CH<sub>4</sub>), sulfur hexafluoride (SF<sub>6</sub>), hydrofluorocarbons (HFCs) or perfluorocarbons (PFCs), which are greenhouse gases defined in RCSA §22a-174-1(49), and would emit negligible amounts of sulfur oxides, volatile organic compounds and particulate matter.

The fuel cell desulfurization system would remove sulfur that is used as an odorant in natural gas because it is a fuel cell system contaminant. Desulfurization creates zinc-sulfide, a non-hazardous waste that would be contained within the fuel cell unit until facility refurbishment is required, usually after 10 years of operation. The desulfurization vessel is sealed and then removed from the fuel cell for recycling and disposal. The vessel is recyclable as scrap metal.

No trees would be removed to construct the Project. Visual impact from the proposed Project would be minimal because it would be located on the university campus and only visible from on-site driveways. Additionally, the 8-foot tall chain link fence with privacy slats would block direct views into the compound area.

No wetlands, forest or prime farmland soils would be disturbed by the proposed Project as it is located entirely within paved/previously disturbed areas on a developed property. Erosion and sedimentation controls for the proposed facility would comply with the 2002 *Connecticut Guidelines for Soil Erosion and Sediment Control*.

The site is not located within a DEEP Natural Diversity Database buffered area or a DEEP-designated Aquifer Protection Area (APA). There are no APAs within Hartford or West Hartford.

The Project is located within the Federal Emergency Management Agency-designated Zone AE, a special flood hazard area. The 100-year flood elevation and the 500-year flood elevation are approximately 37 feet and 38 feet above mean sea level (amsl), respectively. The facility would have an approximate “top of concrete” elevation of at least 40 feet amsl to elevate the equipment above the 100-year and 500-year flood elevations.

The site is previously disturbed and would not impact historic or cultural resources.

### **Public Safety**

Before commissioning the proposed facility, HyAxiom would use nitrogen or atmospheric air under pressure as pipe cleaning media in accordance with Public Act 11-101, An Act Adopting Certain Safety Recommendations of the Thomas Commission.

The fuel cell facility has internal and remote 24/7 operational monitoring. Abnormal operation would cause the facility to automatically shut down. The facility can also be shut down through a remote operations center as well as manually. The fuel cell facility is designed in accordance with American National Standards Institute and Canadian Standards Association (ANSI/CSA) America FC 1-2004 and the National Fire Protection Association, Inc. Standard 853 for stationary fuel cell power systems and includes extensive safety control systems, including both automatic and manual shutdown mechanisms that comply with pertinent engineering standards.

An emergency response plan (ERP) for the facility is included within the Petition. HyAxiom would submit the ERP to the City and Town Fire Marshals and would provide on-site training to local officials. The fuel cell facility would be located within a locked fenced compound.

The fuel cell system is controlled electronically and has internal sensors that continuously measure system operation. If safety circuits detect a condition outside normal operating parameters, the fuel supply is stopped, and individual system components are automatically shut down. In addition, manual emergency shut down push buttons would be located at the site.

Noise associated with the construction of this Project would be temporary and exempt from DEEP Noise Control Regulations. Operation of the facility is expected to produce noise emissions no greater than 20 dBA at the nearest off-campus residential receptors located approximately 1,394 feet to the southeast and east of the fuel cell and would comply with DEEP Noise Control Regulations.

### **Conclusion**

The Project is a distributed energy resource with a capacity of not more than sixty-five megawatts, meets air and water quality standards of the DEEP, and would not have a substantial adverse environmental effect. It would reduce the emission of air pollutants that contribute to smog and acid rain, and to a lesser extent, global climate change, and furthers the State’s energy policy by developing and utilizing renewable energy resources and distributed energy resources. Furthermore, the Project was selected under the state’s LREC/ZREC Program.

### **Recommendations**

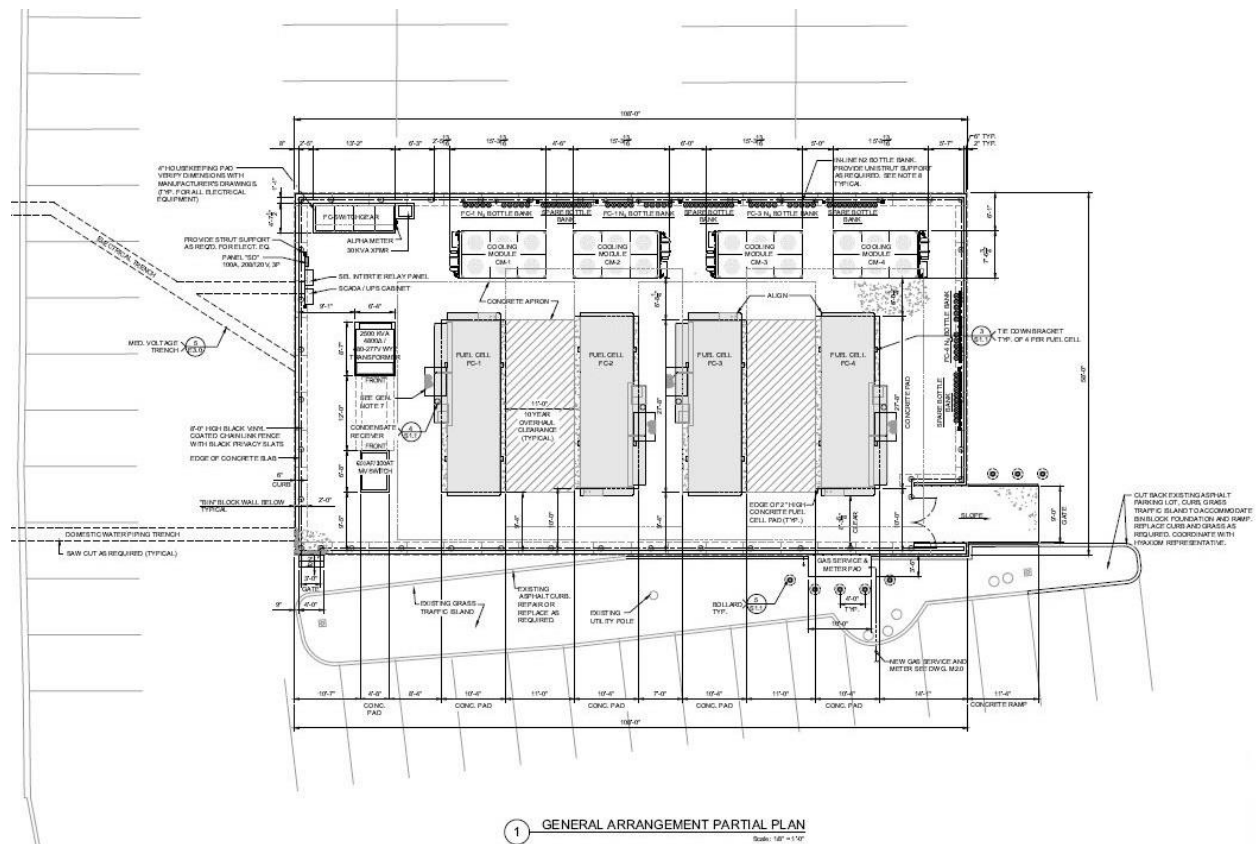
If approved, staff recommends the following conditions:

1. Approval of any Project changes be delegated to Council staff; and
2. Provide a copy of the Fuel Cell Emergency Response Plan to local emergency responders prior to facility operation and provide emergency response training.

### Fuel Cell Location



## Site Plan





### Site Location Photograph

