

DRAFT

**Petition No. 1620
VFS, LLC
York Correctional Institution
199 West Main Street, East Lyme (Niantic), Connecticut**

**Staff Report
July 12, 2024**

Notice

On March 14, 2024, the Connecticut Siting Council (Council) received a petition from VFS, LLC (VFS), for a declaratory ruling, pursuant to Connecticut General Statutes (CGS) §4-176 and §16-50k, for the installation of a customer-side 920-kilowatt combined heat and power fuel cell facility and associated equipment at York Correctional Institution located at 199 West Main Street, East Lyme, Connecticut (Petition or Project).

Over the last six months, VFS and the Department of Corrections (DOC) have collaborated on the development of the Project. On behalf of VFS, HyAxiom, Inc., the manufacturer of the fuel cells, provided Project plans to Town of East Lyme officials (Town) prior to filing with the Council.

On March 13 and March 20, 2024, VFS provided notice of the Project to the Town, required state officials and agencies, and abutting property owners. No comments were received.

On March 15, 2024, the Council sent correspondence to the Town stating that the Council has received the Petition and invited the municipality to contact the Council with any questions or comments by April 13, 2024. No comments were received.

Also, on March 15, 2024, 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 April 13, 2024. No comments were received.

On March 20, 2024, the Council sent correspondence to VFS noting a deficiency in the completeness of the Petition. Specifically, proof of service of the Petition to state officials and agencies and a labeled abutters map were not provided to the Council. On March 21, 2024, VFS submitted proof of service of the Petition on the required officials and agencies and a labeled abutters map. On March 21, 2024, the Council rendered the Petition complete.

The Council issued interrogatories to VFS on June 4, 2024. VFS provided responses to Council interrogatories on June 14, 2024.

Pursuant to CGS §4-176(e) of the Uniform Administrative Procedure Act, an administrative agency is required to take action on a petition for a declaratory ruling within 60 days of receipt. At a public meeting held on April 25, 2024, 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 September 10, 2024, 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 on October 21, 2020 as part of the Low Emission Renewable Energy Credit and Zero Emission Renewable Energy Credit (LREC/ZREC) Program and has entered into a 13-year LREC agreement with Eversource.¹

The proposed facility is not proposed to be undertaken by state departments, institutions or agencies, and is not to be funded in whole or in part by the state through any contract or grant. It is a privately funded project.

Proposed Site

Pursuant to CGS §16-50x, the Council has exclusive jurisdiction over the proposed fuel cell facility “site.” Under 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. The Council does not have jurisdiction or authority over any portion of the host parcel beyond the boundaries of the Project “site.” This includes portions of the host parcel retained by the landowner and portions of the host parcel the landowner may lease to third parties. Once a facility is decommissioned, the Council no longer has jurisdiction or authority over the Project “site.”

The proposed facility would be located within an approximately 3,675 square foot site on the 617-acre York Correctional Institution parcel in East Lyme.

The parcel is zoned residential, RU-40 and is developed with correctional institution buildings and parking areas. The proposed facility would be located in a lawn area southeast of Building 10 - Central Plant and Warehouse.

The surrounding area consists of correctional institution-owned property. The nearest residential property line and residential building is 247 feet and 492 feet to the southeast, respectively, at 269 and 267 Roxbury Road (apartment complex).

Proposed Facility and Associated Equipment

The facility would consist of two 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 within the fuel cell complies with applicable state and federal regulations.

¹ As of June 30, 2021, the Non-Residential Renewable Energy Solutions (NRES) program is a successor program to the LREC/ZREC and Virtual Net Metering (VNM) programs to further develop the state’s Class I renewable energy objectives and to encourage the participation by customers in underserved and environmental justice communities through 20-year contracts.

The proposed facility would be a customer-side combined heat and power distributed resources project, designed to provide electricity and thermal energy. The facility would have an overall annual electrical efficiency of approximately 95 percent with utilization of waste heat. Waste heat would be used at correctional institution Building 10 to preheat the boiler return, thus offsetting the use of natural gas. The facility would provide approximately 90 percent of the correctional institution energy load. The facility was not designed to operate as a backup power source. The facility was designed to operate in parallel with the grid.

The facility would be installed on a 73.5-foot by 50-foot concrete pad enclosed by an 8-foot high chain-link fence with privacy slats.

The fuel cell power modules are each approximately 27.3 feet long by 8.3 feet wide by 10 feet tall. Two cooling modules, measuring 16 feet long by 7.9 feet wide by 6 feet tall, would be installed adjacent to the fuel cell units. One 1500 kVA transformer, switchgear and other associated electrical equipment would also be installed within the fenced compound.

A 28-square foot pad for natural gas service and meter equipment would be installed adjacent to the northwestern compound fence line. The gas/meter pad would be enclosed by a chain link fence matching the fuel cell compound fence.

A 4.8-kV electrical interconnection would run underground for 75 feet to connect to existing electrical equipment within Building 10. The Project would interconnect with Eversource's electric distribution system through existing correctional institution equipment. Eversource is currently reviewing a Project interconnection application.

The facility's water and natural gas connections would also extend underground and connect to existing equipment within Building 10.

The facility would be accessed by a new 10-foot wide, 100-foot long asphalt driveway extending from an existing driveway on the host parcel. Site access would be controlled by a locked fenced gate.

Project construction is expected to begin in summer 2024 and continue over a four-month period. Construction hours would be from 8:00 a.m. to 5:00 p.m. Monday through Friday.

The fuel cell has an operational service life of 20 years; however, the solid oxide media in the fuel cell unit would be replaced every 5-7 years. At the end of the 20-year operational life, the fuel cell unit and associated equipment would be dismantled and removed.

The estimated cost of the facility is \$6.7M.

Public Health and Safety

Before commissioning the proposed facility, VFS 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. Nitrogen would be stored on site and would be remotely monitored to detect leaks and provide prompt response.

The fuel cell facility has internal and remote 24/7 operational monitoring. Abnormal operation would cause the facility to automatically shut down and service technicians dispatched to site if necessary. 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.

A sample emergency response plan (ERP) for the facility is included within the Petition. VFS would develop a formal, site-specific ERP once the final design is complete. Emergency responders would have the ability to shut down the fuel cells and shut off natural gas flow to the facility without entering the fenced area. HyAxiom service personnel would be dispatched in the event of any emergency. HyAxiom would offer site safety training to emergency responders and correctional facility personnel once construction of the facility is completed.

LED lighting would be installed at the site and would be controlled by sensors and/or a timer.

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. When the fuel cells go into emergency shutdown mode, nitrogen would be used to purge hydrogen remaining in the fuel processing equipment to safe levels.

The fuel cell facility would be located within an existing, secured area, accessible only to authorized personnel. All VFS/HyAxiom service personnel must undergo a background check by DOC and comply with correctional institution security protocols.

The construction or operation of the proposed facility will not impact or interfere with any existing utilities or infrastructure within the surrounding area. The nearest airport (Groton-New London Airport) is located approximately 9.6 miles east of the proposed facility. Notification to the Federal Aviation Administration is not required.

The proposed facility would be in compliance with DEEP Noise Control Standards. Noise modeling indicates noise from operation of the facility would be less than 40 dBA at the nearest residential receptor (269 Roxbury Road).

Noise associated with Project construction would be temporary and exempt per Department of Energy and Environmental Protection (DEEP) Noise Control Regulations.

Environmental Effects and Mitigation Measures

The fuel cell facility would comply with all applicable DEEP water quality standards as no water would be consumed or discharged once the facility is operational. The proposed facility would be connected to the correctional institution's water system and water consumption would only occur at system fill, requiring approximately 350 gallons for each fuel cell. Minimal discharge of de-ionized water would occur in rare instances and directed to a drywell.

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 _x	0.02
CO ₂	496 With waste heat recovery
CO ₂ *	1,006 Without waste heat recovery

*DEEP amended its regulations in 2016 to eliminate the CO₂ 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 CO₂ permit requirements (*Utility Air Regulatory Group v. U.S. Environmental Protection Agency*, 573 U.S. 302 (2014))

The proposed facility would emit no methane (CH₄), sulfur hexafluoride (SF₆), 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.

The Project is located entirely within a previously disturbed area on a developed property. No wetlands, trees, or prime farmland soils would be impacted by site construction. The nearest waterbody Bride Lake is located approximately 1,380 feet north-northeast of the facility site.

Erosion and sedimentation controls for the proposed facility would comply with the *Connecticut Guidelines for Soil Erosion and Sediment Control*, effective March 30, 2024. No permanent stormwater management features are proposed.

The site is not located within a DEEP Natural Diversity Database buffered area.

The site is located within the DEEP-designated Bride Lake Aquifer Protection Area.

The site is not within a Federal Emergency Management Agency-designated flood zone.

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

Visual impact from the Project would be minimal and confined to the host parcel. A wooded area provides visual screening to the abutting apartment complex to the southeast.

Conclusion

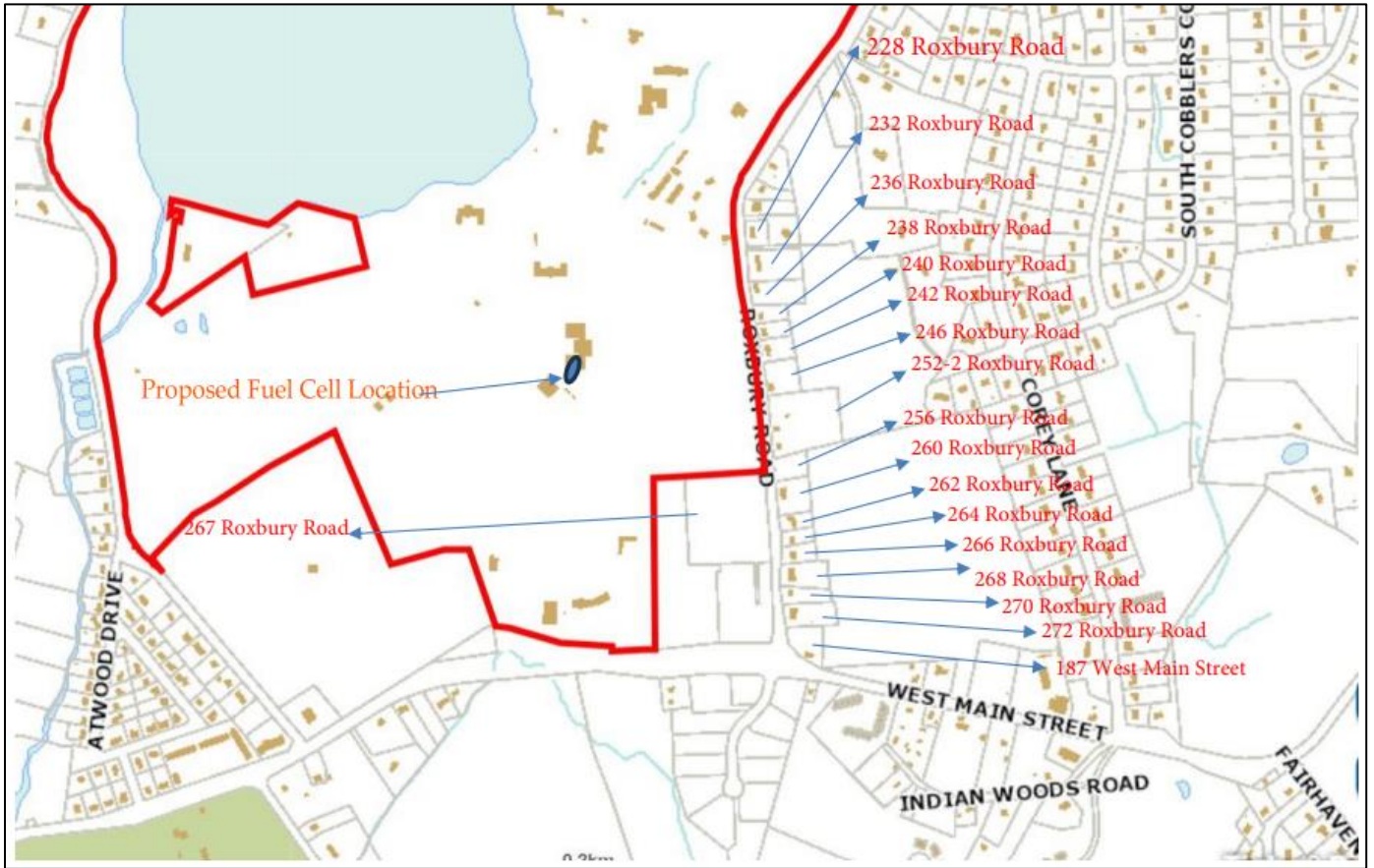
The Project is a distributed energy resource with a capacity of not more than sixty-five megawatts, meets air and water quality standards of the DEEP, and would not have a substantial adverse environmental effect. It would reduce the emission of air pollutants that contribute to smog and acid rain, and 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 LREC/ZREC Program.

If approved, staff recommends the following conditions:

1. Approval of any Project changes be delegated to Council staff;
2. Provide a detailed site plan including, but not limited to, final facility layout and the interconnection points for electricity, water and natural gas prior to the commencement of construction;
3. Provide a copy of the Fuel Cell Emergency Response Plan to local emergency responders prior to facility operation and provide emergency response training that includes an itemized list of necessary fire suppression equipment; and
4. Provide a Construction Spill Prevention Control and Countermeasure Plan with contractor information and appropriate reporting forms.

Site Location



Site Location – Adjacent to Building 10



Site Plan

