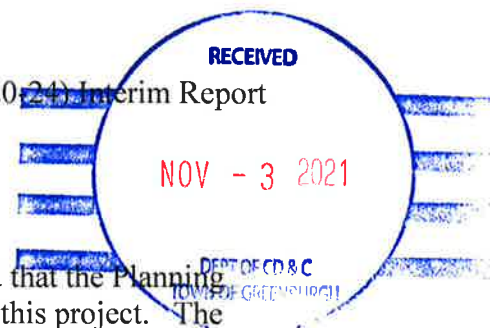


TO: Planning Board
FROM: Conservation Advisory Council ("CAC")
RE: Bloom Energy Fuel Cells (Natural Gas-to-Electricity) (PB 20-24) Interim Report
DATE: Nov. 1, 2021



INTERIM REPORT

A week before our October 28 meeting, the CAC was informed that the Planning Board would like the CAC to consider the environmental aspects of this project. The CAC is pleased to do so.

The Bloom Energy servers sought to be installed at the Altice site use a proprietary solid oxide fuel cell technology to convert natural gas (supplied through an existing Con Ed supply line) into electricity through an electrochemical process without combustion. The project will generate 1.5MW of electric power to cover the baseload requirements for the Altice data center on a 24/7/365 basis. This is a technology which raises environmental issues the CAC has not reviewed before. The project is intended to run for a ten year contract.

Based on CAC research and inquiries we understand that the facility location is adjacent to a multi-family residential district, approximately 35 ft. from the nearest single-family residence property line, and approximately 1,800 ft. from an elementary school (Lee F. Jackson Elementary School) attended by over 250 students.

Based on the information supplied to the CAC to date, research by the CAC, and the October 28 CAC meeting at which Bloom Energy made a presentation and answered questions, the CAC believes there are at least the following environmental issues.

Emissions of CO2

A. Local Health Effects

Bloom Energy promotes its technology as producing very little CO2 relative to other forms of electricity production, but it admittedly does emit some. We have asked Bloom to quantify how much CO2 its fuel cell technology would release into the air at its proposed site on a daily basis, but so far Bloom has not answered this question. We consider this a pertinent question because CO2, in addition to being a greenhouse gas with negative impacts on climate change, has also been shown to be directly harmful to human health given sufficient concentration. According to the USDA, normal outdoors CO2 levels range from 300 - 400 ppm (0.3 - 0.4%). If CO2 levels reach 30,000 ppm (3%), there are moderate health impacts. At a level of 40,000 ppm (4%), there is immediate danger to life or health.

The CAC also notes that CO2 may be a co-carcinogen. A co-carcinogen operates in conjunction with other agents in promoting the development of cancer. A publication of the National Center for Biotechnology Information states: "The toxicity of carbon

dioxide has been established for close to a century. A number of animal experiments have explored both acute and long-term toxicity with respect to the lungs, the cardiovascular system, and the bladder, showing inflammatory and possible carcinogenic effects. Carbon dioxide also induces multiple fetal malformations and probably reduces fertility in animals.” This requires further exploring and analysis.

The CAC’s statutory mandate is to advise on environmental matters as they affect the Town and its residents. State law defines “environment” to include affects on air and affects on human health. SEQR, 6 NYCRR Part 617.2(l). Moreover, the Town Code prohibits “any use which is . . . objectionable by reason of emission of gas . . . or other form of air pollution . . . which can cause injury, annoyance or disturbances to any of the surrounding properties or to their owners and occupants; and any other process or use which is prejudicial to health, safety or the general welfare.” Town Code, Section 285-36M. Therefore the issue of local emissions of CO2 is directly pertinent.

B. Compatibility with Climate Act Goals

Under the provisions of the 2019 Climate Leadership and Community Protection Act (“Climate Act”), New York is in the process of transitioning away from the use of fossil fuels (including natural gas) to the use of renewable, ultimately no-emission sources, of electric power. The targets are to reduce fossil fuel-generated electricity by 70% by the year 2030 and to zero by the year 2040. Section 7(2) of the Climate Act requires all state agencies to “consider whether [their] decisions are inconsistent with . . . the Climate Act.”

Bloom Energy appears to be actively involved in trying to develop clean sources of power. For example, as more San Francisco Bay Area cities prohibit natural gas use in new buildings, San Jose-based Bloom Energy has secured exemptions for its fuel cell systems, arguing that they will increasingly be powered by zero-carbon hydrogen in the future. However, for the ten-year life of the proposed project, there is no expectation of use of any fuel other than natural gas. Transition to use of hydrogen or biogas at a later date is speculative.

In response to our questions about CO2 emissions, Bloom replied that the emissions from any distributed energy project are properly assessed relative to the electricity from the electric distribution grid that is displaced when the project is installed. Bloom quantifies CO2 emissions from its system at between 679 - 833 lbs of CO2 per MWh of power produced. Bloom asserts that in Westchester, the marginal power plants on the grid that will be displaced have an emission rate of over 1,016 lbs per MWh. This analysis supposes that any electricity produced in the Bloom power cells would otherwise be coming from the dirtiest suppliers to Westchester. It is not clear that this assumption is legitimate. Meanwhile, the EPA profiler (for 2019) puts NYC/Westchester's average production of CO2 at 553.8 MWh. If this level of emissions held steady from 2019 into the present, then the Bloom technology would not be attractive from an environmental standpoint in Westchester. It is not clear what happens to Westchester's CO2 emissions minus Indian Point.

Bloom has stated that technology to capture and sequester emitted CO2 is under development. The feasibility of capturing CO2 emissions needs exploring.

Emission of Heat/Degradation of Fuel Cells

In response to CAC inquiry, we learned that there is a need to exhaust heat from the facility. The fuel cells need to be fired up to high temperatures to start up and run at 850 C (1,562 F). This could cause an increase in surrounding ambient air temperature and issues of safely securing the facility from unauthorized access. The CAC needs to follow-up with the applicant to determine the intensity of the heat exhausted by the facility.

Perhaps more significantly, the heat causes the fuel cells to slowly degrade. Their efficiency ratio goes down over time, from about 63% to 45%, averaging 54%. As of 2019, they needed to be replaced every five years. We understand this replacement is part of Bloom's contractual maintenance responsibility. What we don't know is what chemicals and other materials are contained in the fuel cells and what happens to the chemicals and other materials as the fuel cells degrade.

Financial Responsibility for Decommissioning

Applicant states that its contract with Altice requires it to decommission the facility. The CAC has not seen the contract. Whatever the applicant's contractual arrangements with Altice are, that does not necessarily protect the Town from the facility being abandoned adjacent to a multi-family district 35 feet away from a single-family housing district.

The Planning Board may wish to consider a fund or letter of credit arrangement for decommissioning, similar to the financial responsibility requirement in the Town's recently adopted Battery Energy Storage System law.

Aesthetics of Noise Abatement

Applicant proposes to install the sound buffering mitigation recommended by Veneklasen Associates in its March 18, 2020 report. The proposed noise abatement screening consists of quilted fiberglass sound absorbing panels. The CAC members did not feel these panels would be aesthetically appropriate adjacent or close to residential areas.

Applicant is going to supply more information as to the location and visibility from off-site of these abatement panels.

Safety

The Deputy Commissioner of the Department of Community Development & Conservation has advised the CAC that project information was sent to the local fire department and that it responded that it had no comments. Applicant has offered to host

the fire department for a walk-through tour. The Planning Board may wish to consider requesting the fire department to take the applicant up on its offer.

Applicant stated to the CAC that no PPE was required if an emergency event occurred at the fuel cell facility. The documents submitted to the CAC state that only Bloom Energy personnel or personnel trained by Bloom Energy are permitted access to the inside of the system, and PPE must be worn, to address electrical connections.

The facility will be monitored 24/7/365 remotely, but no Bloom Energy personnel will be located on-site. Applicant's representatives were not sure if any applicant's personnel qualified to address an emergency is located in Westchester 24/7/365. The CAC requested information on the location of the closest office of applicant's qualified personnel and as to response time to come to the facility.

Bloom Energy representatives stated that Altice personnel could respond at first if there were a visible emergency. If initial response responsibility is to be carried out by Altice personnel, questions of training, type and availability of on-site PPE, and assuring trained personnel are on-site 24/7/365 needs to be addressed.

NYS Dept. of Environmental Conservation Filing

Bloom Energy projects in New York at the Downstate Medical Center and at the King County Hospital were the subject of filings with the NYS Department of Environmental Conservation ("DEC"). Permits were issued. The permits had conditions and were time limited.

Bloom Energy stated in its October 27 letter to the CAC: "The air pollutant emissions from a fuel cell are such that the State of New York exempts these types of projects from air permitting."

The Planning Board may wish to ask its counsel to explore and advise as to whether a filing with the State's DEC is required.

The CAC wishes to emphasize that it has only had information on this project for 8 days prior to its meeting. There may be other issues relevant to the environment as it affects the Town and its residents.

The CAC has rescheduled its November meeting so that it can meet with the applicant before the Planning Board's November 17 meeting. Assuming the CAC can receive clear answers to open questions, the CAC will try to develop a more definitive report to the Planning Board before the Planning Board's November 17 meeting.

At this point, the only conclusion the CAC has reached is that it needs to receive answers to open questions before it can responsibly analyze and advise the Planning Board as to environmental issues relevant to this project. Any assistance the Planning

Board can give the CAC in encouraging the applicant to answer the CAC inquiries would be appreciated.

CONSERVATION ADVISORY COUNCIL

Adopted October 28, 2021

cc: Councilman Ken Jones, Town Board CAC Liaison
Town Clerk
Commissioner, Community Development & Conservation
Deputy Commissioner, Community Development & Conservation
Assistant Planner, Community Development & Conservation