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June 25, 2021

CERTIFICATE OF THE SECRETARY OF ENERGY AND ENVIRONMENTAL AFFAIRS
ON THE
ENVIRONMENTAL NOTIFICATION FORM

PROJECT NAME : 28 Fitchburg
PROJECT MUNICIPALITY : Somerville
PROJECT WATERSHED : Boston Harbor
EEA NUMBER : 16377
PROJECT PROPONENT : Brickbottom I QOZB LP
DATE NOTICED IN MONITOR : May 26, 2021

Pursuant to the Massachusetts Environmental Policy Act (MEPA; M.G. L. c. 30, ss. 61-62I) and Section 11.06 of the MEPA regulations (301 CMR 11.00), I hereby determine that this project **does not require** an Environmental Impact Report (EIR).

Project Description

As described in the Environmental Notification Form (ENF), the project consists of the development of a 199,200 square foot (sf) commercial building consisting of office, research and development (R&D), and lab uses (totaling 192,700 sf), tenant amenity and accessory retail space (totaling 6,500 sf), and approximately 241 parking spaces on a currently vacant lot. The parking proposed as part of the project includes 12 at-grade spaces for exclusive use of the abutting condominiums; the remainder of parking spaces will be located in a two-level below-grade parking garage.

The project proposes an 18-ft setback from the back of curb along Fitchburg Street and will provide a six to ten foot sidewalk along the building frontage. This sidewalk zone will meet all required American with Disabilities Act (ADA) design standards and provide bike racks, street lighting, and fixed bench seating and plantings. An elevated and protected northbound bike lane will be established along Fitchburg Street as part of the project. Along the eastern side of the project site adjacent the MBTA right-of-way, a path with a landscaped edge provides access to the building's bike storage room

and shower facilities. Bicycle parking needs for the project will be accommodated through the provision of 40 long-term secured bicycle parking spaces and 12 short-term bicycle parking spaces.

Project Site

The 1.5-acre project site is located in the Brickbottom neighborhood of Somerville and consists of two parcels located at 28 Fitchburg Street and 28 Chestnut Street. The project site is bordered by Chestnut Street to the west, Fitchburg Street to the south, Massachusetts Bay Transportation Authority (MBTA) property to the east, and a parking lot to the north. The adjacent MBTA property is part of the Green Line Extension project. The properties were formerly occupied by warehouse uses including a 24,624 sf building and 65,658 sf building which were demolished in 2021. The project site is not located in the 100-year floodplain as mapped by the Federal Emergency Management Agency (FEMA).

Environmental Impacts and Mitigation

Potential environmental impacts of the project include generation of 2,460 new unadjusted average daily trips (adt); construction of 241 new parking spaces; new water use of 29,300 gallons per day (gpd) (total of 29,500 gpd); new wastewater generation of 26,620 gpd (total of 26,800 gpd). Measures to avoid, minimize, and mitigate environmental impacts include removal of 0.1 acres of impervious area; reuse of an existing developed site; implementation of a transportation demand management (TDM) program; construction of a stormwater management system; and implementation of construction period best management practices (BMPs).

Jurisdiction and Permitting

This project is undergoing MEPA review and requires an ENF pursuant to 301 CMR 11.03(6)(b)(13) because it requires an Agency Action and will involve generation of 2,000 or more New adt on roadways providing access to a single location. The project requires a Zone of Influence (ZOI) Design Review from MBTA and consent from the Massachusetts Department of Transportation (MassDOT) under M.G.L. Chapter 40 Section 54A for issuance of a local permit to build on lands formerly used as railroad right-of-way. The ENF notes that the project may require a Temporary Construction Dewatering Permit (if applicable) from the Massachusetts Water Resources Authority (MWRA).

The project requires a National Pollutant Discharge Elimination System (NPDES) Construction General Permit (CGP) from the U.S. Environmental Protection Agency (EPA), and review from the Federal Aviation Administration (FAA). It requires Site Plan Approval from the Somerville Planning Board.

Because the Proponent is not seeking Financial Assistance from the Commonwealth for the project, MEPA jurisdiction for any future reviews would extend to those aspects of the project that are within the subject matter of required or potentially required Agency Actions and that may cause Damage to the Environment as defined in the MEPA regulations.

Review of the ENF

The ENF provides a description of existing and proposed conditions, preliminary project plans, a summary of community outreach, and an analysis of alternatives. It identifies measures to avoid, minimize and mitigate project impacts. The City of Somerville submitted comments indicating that the project is generally consistent with the City's comprehensive planning plan for the Brickbottom neighborhood which encourages transit-oriented development.

Alternatives Analysis

The ENF includes analysis of the following alternatives: No Build Alternative, Increased Build Alternative, and the Preferred Alternative as described above. The No-Build Alternative would maintain the existing vacant condition of the site. As described in the ENF, this alternative is not a viable option because it does not achieve the Proponent's goals of developing the site and is not consistent with the City's planning for the Brickbottom neighborhood which is intended to create new housing, civic spaces, and commercial development. The Increased Build Alternative proposes the construction of a new building containing approximately 251,360 SF of lab/R&D/office and retail uses. It would include an increased office/R&D and retail space compared to the Preferred Alternative. The proposed building height under the Increased Build Alternative would be the same as the Preferred Alternative. According to the Proponent, both the Increased Build and Preferred Alternative are zoning compliant because they comply with minimum/maximum dimensional and use requirements of the zoning district. While Proponent could construct a larger building within the parameters of the existing zoning, the project would not be able to provide the level of public realm improvements achieved with the Preferred Alternative.¹ The Increased-Build Alternative would reduce on-site impervious area by 0.09 acres (compared to the Preferred Alternative which would decrease impervious area by 0.1 acres). Additionally, the increase in commercial uses would result in more new unadjusted vehicle trips per day (3,092) compared to the Preferred Alternative (2,460). The Increased Build Alternative would use more potable water, approximately 37,100 GPD, and would generate the more wastewater, approximately 33,700 GPD than the Preferred Alternative.

The Preferred Alternative will be less impactful than the Increased-Build Alternative and accommodate labs and modern offices that will attract the desired commercial development as envisioned by the City of Somerville's comprehensive plan "SomerVision." The ENF does not indicate whether the Proponent considered a reduced build alternative, or how such alternative would fare in terms of financial feasibility or ability to meet project goals.

Transportation

The project requires a Chapter 40 Section 54A Approval for Construction on Former Railroad Property. Vehicular site access is anticipated to be from Chestnut Street in a similar location to the existing loading dock access from the former 28 Fitchburg Street warehouse.

The project is estimated to generate 2,460 unadjusted new vehicle trips per day based on ITE Land Use Codes (LUC) 760 (Research & Development Center), LUC 710 (General Office), and LUC 820 (Shopping Center). The project would generate 84 vehicle trips in the morning peak hour and 108 vehicle trips in the afternoon peak hour. The trip generation was refined based on proposed mode share data presented in multiple transportation studies in the area, including the Union Square Neighborhood

¹ Clarifying e-mail provided to the MEPA Office on 6/24/21.

Plan and the US2 development traffic study, and adjusted to account for project site location and the surrounding transportation network, including the Green Line Extension (GLX) project. When adjusted, the Project is expected to generate a net increase of approximately 1,252 new daily vehicle trips, with approximately 114 net new vehicle trips during the morning peak hour and 126 net new vehicle trips during the evening peak hours. Similarly, the project is projected to generate a net increase of approximately 938 new daily transit trips, with approximately 83 new transit trips during the morning peak hour and 94 new transit trips occurring during the evening peak hours. The project is also expected to generate 575 bicycle/walking trips, with approximately 51 new trips during the morning peak hour and 59 new trips during the evening peak hour. As described in its comment letter, MassDOT finds the methodology used and the resulting mode share splits acceptable.

The TIA does not present capacity analyses and a summary of average and 95th percentile vehicle queues for the intersection within the study area. According to the ENF, most of these intersections are under the jurisdiction of the City of Somerville and are not expected to experience a significant change of levels of service (LOS) or delay during the weekday morning and afternoon peak hours due to the low volume of site trip generation.

The area of the project site is well served by public transportation: future GLX service station will be provided at the new East Somerville Station which will be accessed via Washington Street, just under one-half mile walking distance. The project site is also served by the MBTA Bus Routes 80, 86, 87, 88, 91 and CT2. The ENF includes a comprehensive transit analysis of the transit services that surround the site. The ENF includes a detailed presentation of the impacts to the transit system with summary tables for the anticipated demand in terms of MBTA Service Delivery Policy (SDP) for transit and bus services. The TIA has also completed a capacity analysis of the peak periods for the Medford Branch of the GLX. According to the analyses, both the transit lines and the bus routes surrounding the site are expected to see minimal impact to the system based on the additional transit trips generated by the project. The Proponent has noted that Bus Routes 86 and 87 would experience increases in, respectively, one and two trips that, on average, have passenger loads that exceed the MBTA's SDP passenger crowding threshold; however, these conditions are expected to occur with or without the project.

Parking proposed for the project will be located within two levels of below-grade parking accommodating 229 parking spaces which will be accessed via the driveway on Chestnut Street. Comments from the City of Somerville note the City prohibits new off-street parking from being designated as "accessory" to a primary land use; rather, the City requires new garage facilities to function as public garages offering hourly, daily, weekly and monthly parking at market rates. The intent of this unbundling practice is to discourage new tenant employees from driving to work. The details of garage pricing and operations will be reviewed and conditioned in local zoning via the project's Mobility Management Plan.

The ENF included a Transportation Demand Management (TDM) plan which includes the following measures:

- Provision of information on and marketing of transit services (including via a project website);
- Membership in a future Transportation Management Association (TMA);
- Provision of orientation packets containing multimodal information to tenants;

- Provision of bicycle storage in secure, sheltered areas and bicycle racks for visitors near building entrances;
- Unbundled parking; and
- Designation of a transportation coordinator to oversee transportation issues.

The Proponent will work with the City of Somerville to implement the TDM plan.

Stormwater

The project will remove approximately 0.16 acres of impervious area. The site is primarily comprised of pavement currently and provides minimal natural attenuation of stormwater runoff, groundwater recharge and/or water quality enhancement of existing runoff prior to discharge. The project will comply with the MassDEP Stormwater Management Policy and Standards for redevelopments to the maximum extent practicable and incorporate on-site stormwater management and treatment systems which will collectively improve water quality, reduce runoff volume, and attenuate peak rates of runoff in comparison to existing conditions. Proposed open space areas and corresponding reduction in impervious area combined with new subsurface infiltration systems will benefit the municipal system by promoting additional groundwater recharge, and removal of sediment and phosphorus from stormwater runoff. No water from the ground or any other non-stormwater flow will be discharged to the public storm drain system or public wastewater system. The stormwater management system will provide retention and infiltration of 1 inch of rainfall over all impervious areas in the proposed condition; and the project will reduce total Phosphorus (TP) loads as required by the Charles River TMDL, i.e. a 65% reduction. To achieve this stormwater management performance, the project will incorporate retention and infiltration via a 37,000-gallon cistern is sized to hold the 1-inch rainfall depth volume from the roof as well as the 90-th percentile rainfall depth over the entire project site to achieve the LEED Rainwater Management credit and bioswales in the Chestnut street sidewalk.

Wastewater

As described in the ENF, the project will generate wastewater flow of approximately 26,800 gallons per day (gpd), an increase of 26,620 gpd over the estimated existing wastewater generation of 180 gpd. The ENF states that there is an existing 12-inch separate sewer that flows north in Chestnut Street to Poplar Street and discharges to the MWRA's Cambridge Branch Sewer at McGrath Highway/Somerville Avenue Extension. The 12-inch sanitary sewer ties into MWRA's Cambridge Branch Sewer at CSO regulator SOM009, which conveys flows to MWRA's DeLauri Pump Station and North Metropolitan sewer system for transport to the Deer Island Treatment Plant. In large storms, flows exceeding the capacity of the Cambridge Branch Sewer can overflow at regulator SOM009 to the 84-inch Monsignor O'Brien Highway Conduit (owned jointly by Somerville and Cambridge), which transports the overflows to MWRA's Prison Point CSO treatment facility. Combined flows to the Cambridge Branch Sewer from Somerville, as well as Cambridge and Boston, can also contribute to untreated CSO discharges to the Charles River and the Mystic River in larger storms. As described in the ENF, the Somerville Engineering Department administers the City's Inflow and Infiltration (I/I) mitigation program under a municipal Policy that requires all new sewer connections or expansions of existing connections that exceed 330 gallons per day of wastewater to mitigate the impacts of the development by removing four gallons of infiltration and inflow for each new gallon of wastewater flow. A Project Proponent may elect to pay a fee based on the project's I/I mitigation requirement, that

is deposited into the municipal fund dedicated for the City's I/I removal projects. The Proponent will comply with the City's I/I Policy by paying the fee into the dedicated fund.

Comments from MWRA note that a Temporary Construction Dewatering Permit is required prior to the discharge of groundwater from any construction sites associated with the project into the sanitary sewer system. A Sewer Use Discharge Permit is required prior to discharging laboratory wastewater, research and development wastewater, photo-processing, and/or industrial process wastewater from laboratory or commercial space associated with the project into the MWRA sanitary sewer system. Any gas/oil separators in parking garages associated with the project must comply with 360 C.M.R. 10.016 and State Plumbing Code. The installation of the proposed gas/oil separators may not be back filled until inspected and approved by the MWRA and the Local Plumbing Inspector.

Climate Change Adaptation and Resiliency

Governor Baker's Executive Order 569: Establishing an Integrated Climate Change Strategy for the Commonwealth (EO 569; the Order) was issued on September 16, 2016. The Order recognizes the serious threat presented by climate change and directs Executive Branch agencies to develop and implement an integrated strategy that leverages state resources to combat climate change and prepare for its impacts. The Order seeks to ensure that Massachusetts will meet greenhouse gas (GHG) emissions reduction limits established under the Global Warming Solution Act of 2008 (GWSA) and will work to prepare state government and cities and towns for the impacts of climate change. I note that the MEPA statute directs all State Agencies to consider reasonably foreseeable climate change impacts, including additional greenhouse gas emissions, and effects, such as predicted sea level rise, when issuing permits, licenses and other administrative approvals and decisions.

Greenhouse Gas (GHG) Emissions and Sustainable Design

While the project does not exceed thresholds for application of MEPA's GHG Policy and Protocol, it involves the development of new commercial uses that will add to GHG emissions from the building sector. The project is subject to the Massachusetts Stretch Code which requires a 10 percent energy performance improvement over ASHRAE 90.1-2013-Appendix G plus Massachusetts amendments. Key strategies for life science and similar "lab-office" spaces include the incorporation of the following effective strategies at little to no cost premium:

- Building design and construction practices that result in low heating and cooling thermal energy demand intensity by:
 - Maintaining envelope integrity with framed, insulated walls with continuous insulation
 - Thermally-broken windows and other components to eliminate thermal bridges
 - Minimizing glass curtain wall assemblies and excessive windows
 - Low air-infiltration, confirmed with in-building air-infiltration testing
 - Energy recovery
 - Management of solar heat gains
- Efficient electrification of space heating where feasible including:

- For highly ventilated lab office (including speculative core-and-shell developments): low temperature, hydronic space heating with heat-input provided by hybrid, in-building, central plant consisting of air-to-water heat pump (primary) and gas boilers (secondary);
- Efficient electrification of water heating, where feasible;
- Extensive rooftop solar PV and readiness; and
- Electric vehicle parking spaces.

I refer the Proponent to additional guidance provided in comments from the Department of Energy Resources (DOER) specifically in regards to electrifying space and service water heating in lab/office space.

Resiliency

As described in the ENF, according to Somerville Climate Forward, which is Somerville's 2017 climate change plan, the project Site will not be vulnerable to coastal flooding from sea level rise based on the City's projections for 2030 through 2070. According to Somerville Climate Forward, which is Somerville's 2017 climate change plan, the project site will not be vulnerable to precipitation-based flooding from climate change based on the City's projections for 2030 through 2070. While the project site is not predicted to be vulnerable to future precipitation-based flooding, the project is proposing measures that will improve stormwater management through incorporation of permeable granite pavers laid around expansive bioretention planters with native plantings, large shade trees and understory evergreen trees. Water will flow from Fitchburg Street and the building façade into these bioretention planting areas for reduced stormwater runoff volume and increased site percolation.

To combat vulnerabilities associated with rising temperatures and urban heat island effect, the project is incorporating design features such as a high-performance building envelope to retain cool air during periods of high temperature. In addition to designing the buildings to withstand the impact of rising temperatures, the project will strive to reduce the urban heat island effect throughout the project site by using roof and non-roof hardscape materials that do not absorb heat, such as light-colored, high albedo paving and roofing, street trees that will provide shaded spaces, and drought-resistant plantings.

Hazardous Materials

The project site is currently being regulated under M.G.L. c.21E and the Massachusetts Contingency Plan (MCP; 310 CMR 40.0000). The northwestern portion of the project site that is subject to the AUL consists of the former parking lot with an address of 26 Chestnut Street and a former one-story slab-on-grade building with an address of 28 Chestnut Street. The release tracking number (RTN) associated with the site is 3-2312. A regulatory endpoint was achieved in 1998 with the submittal of a Class A-3 Response Action Outcome (RAO) Statement, currently referred to as a Permanent Solution Statement which includes an Activity Use Limitation (AUL). The AUL states that the pavement and slab act as barriers to the impacted soil below it and must remain intact in order to maintain a condition of No Significant Risk to human health. Prior to removal of the barrier and excavation of the soil, a Soil Management Plan, Health and Safety Plan, and Release Abatement Measure Plan (RAM) will be prepared to adequately protect the workers and manage the soil.

A total of 69 soil pre-characterization samples were collected at the site in 2020 and 2021 for laboratory analysis to evaluate soil disposal options. One analyte, trichloroethene, was detected in one area outside the AUL and disposal site boundaries for RTN 3-2312 at 28 Fitchburg Street (formerly Building B) above the MCP Reportable Concentrations (RCS-1). This detection constitutes a 120-day reporting condition per the MCP. Therefore, a Release Notification Form is anticipated to be submitted to MassDEP in June 2021.

Construction Period

All construction and demolition (C&D) activities should be managed in accordance with applicable MassDEP's regulations regarding Air Pollution Control (310 CMR 7.01, 7.09-7.10), and Solid Waste Facilities (310 CMR 16.00 and 310 CMR 19.00, including the waste ban provision at 310 CMR 19.017). The Proponent will install BMPs on the project site to control erosion and sedimentation during the construction period. The project will require the preparation of a Stormwater Pollution Prevention Plan (SWPPP) in accordance with the NPDES CGP. The project should include measures to reduce construction period impacts (e.g., noise, dust, odor, solid waste management) and emissions of air pollutants from equipment, including anti-idling measures in accordance with the Air Quality regulations (310 CMR 7.11).

I encourage the Proponents to require that their contractors use construction equipment with engines manufactured to Tier 4 federal emission standards, or select project contractors that have installed retrofit emissions control devices or vehicles that use alternative fuels to reduce emissions of volatile organic compounds (VOCs), carbon monoxide (CO) and particulate matter (PM) from diesel-powered equipment. Off-road vehicles are required to use ultra-low sulfur diesel fuel (ULSD). If oil and/or hazardous materials are found during construction, the Proponents should notify MassDEP in accordance with the MCP. The Proponents should develop a spills contingency plan. All construction activities should be undertaken in compliance with the conditions of all State and local permits. I encourage the Proponents to reuse or recycle C&D debris to the maximum extent.

Conclusion

The ENF has adequately described and analyzed the project and its alternatives, and assessed its potential environmental impacts and mitigation measures. Based on review of the ENF and comments received on it, and in consultation with State Agencies, I have determined that an EIR is not required.

June 25, 2021

Date



Kathleen A. Theoharides

Comments received:

06/15/2021 City of Somerville

06/16/2021 Massachusetts Department of Transportation (MassDOT)
06/17/2021 Massachusetts water Resources Authority (MWRA)
06/25/2021 Massachusetts Department of Energy Resources (DOER)

KAT/EFF/eff



CITY OF SOMERVILLE, MASSACHUSETTS
MAYOR'S OFFICE OF STRATEGIC PLANNING & COMMUNITY DEVELOPMENT
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June 15, 2021

Secretary Kathleen Theoharides
Executive Office of Energy and Environmental Affairs
Attn: Erin Flaherty
100 Cambridge Street, Suite 900
Boston, MA 02114

Dear Ms. Flaherty,

Thank you for the opportunity to comment on the submitted Environmental Notification Form (ENF) for the proposed 28 Fitchburg redevelopment project (EEA#16377), dated May 17, 2021 and published in the MEPA Environmental Monitor on May 26, 2021.

The Project as described in the ENF is broadly consistent with our community's vision for equitable growth and low-carbon mobility in the Brickbottom district. The City's adopted Comprehensive Plan prioritizes mixed-use transit-oriented development in the Brickbottom neighborhood capable of supporting Somerville's progressive agenda around affordable housing production, workforce development, creative enterprise support, open space creation, infrastructure modernization and tax base diversification.

This comment letter will focus on the specific elements of the ENF as follows:

Travel Mode Share

The ENF describes a Project planned for approximately 199,000 square feet of office / lab and accessory retail space. The ENF projects that approximately 600 workers would be associated with the new land uses.

The Project is described as aiming to leverage the mass transit service of the MBTA Green Line Extension light rail, which is scheduled for completion in late 2021. Similarly, the Somerville Community Path Extension is located directly adjacent to the Project site, and will serve to connect users to useful destinations on a safe, off-street shared-use path facility. The ENF also references Somerville's rapidly-expanding network of high-quality walking and biking



infrastructure as a keystone of the Proponent's planning to minimize the environmental impacts of new automobile traffic associated with the Project.

The ENF describes the Project's transportation modeling as assuming a non-automobile mode share of 50%. The City notes that the Project's approved local Mobility Management Plan uses a more aggressive 68.6% non-automobile mode share, which reflects existing neighborhood journey-to-work data along with the strong and rapidly-improving multimodal transportation environment.

The City applauds this mode share target, noting that the Somerville Comprehensive Plan establishes future non-automobile mode share targets for new development at 62.5% non-auto by 2030 and 75% non-auto by 2040. Monitoring of performance against these requirements will be handled through the Project's Mobility Management Plan, which is an enforceable condition of local zoning entitlements.

Motor Vehicle Trip Generation

The ENF uses standard methodology to estimate likely motor vehicle trips generated by the Project. The Proponent projects 2,460 unadjusted daily weekday vehicle trips and 1,252 adjusted daily vehicle trips. Given the Project's 199,000 square foot program, this rate translates to roughly 6.3 daily motor vehicle trips per 1,000 square feet of built space. The Project will be required to submit a City-standard multimodal Transportation Impact Assessment Study (TIAS) during the local entitlement process.

Motor Vehicle Parking

The ENF describes a proposed motor vehicle parking supply of 241 spaces. Given the Project's 199,000 square foot program, a ratio of approximately 1.2 parking spaces per 1,000 square feet of built space is planned. Since motor vehicle parking has been identified as the most important factor in determining automobile mode share in new development, the City supports all efforts to minimize new parking supply.

The ENF articulates a commitment by the Proponent to manage Project parking as a public, parking resource priced at market rates; the City applauds this commitment. The City prohibits new off-street parking from being designated as "accessory" to a primary land use; rather, the City requires new garage facilities to function as public garages offering hourly, daily, weekly and monthly parking at market rates. The intent of this "unbundling" practice is to discourage new tenant employees from driving to work. The details of garage pricing and operations will be reviewed and conditioned in local zoning via the Project's Mobility Management Plan.

The ENF notes that the Project will provide preferred parking for electric vehicles and fuel-efficient vehicles. The Proponent's approved local Mobility Management Plan specifies that 29 garage spaces will be provided as Level 2 EV spaces and an additional 59 garage spaces will be provided as EV Ready spaces. The City applauds the Proponent's plan to provide these important facilities and help catalyze regional electrification of the passenger vehicle fleet.

Mass Transit

The ENF notes that the Project anticipates a 31% transit mode share for new trips, generating approximately 940 new daily weekday mass transit trips. MBTA research has demonstrated a clear link between bus reliability and ridership; hence, on-street transit bus infrastructure like the City's existing Prospect Street and Washington Street bus priority treatments are crucial to the long-term success of bus transit in the Project area. The City of Somerville is currently constructing on-street bus priority infrastructure that will serve Project trips on Somerville Avenue (serving Route 87) and on Washington Street (serving Route 86, Route 91 and Route CT2). Similarly, MassDOT will begin construction of on-street bus priority infrastructure that will serve Project trips on McGrath Highway (serving Route 80).

The Project identifies upgrades to MBTA bus stop facilities as an important measure to encourage transit usage by new employees and visitors. The Project will be required to upgrade bus stop facilities and provide real-time transit screen infrastructure to encourage maximum use of MBTA bus transit.

The City is currently working with the MBTA to improve service frequency on Route 80, Route 86, Route 87, Route 88, Route 91 and Route CT2 bus service, including via the MBTA Bus Network Redesign Process. Similarly, the City is currently supporting the MBTA Silver Line Extension planning process (which is currently considering options for a one-seat transit connection from Brickbottom to Logan Airport via Sullivan Square, Everett and Chelsea). We look forward to continued collaborations with the Proponent, the MBTA and all stakeholders to maximize bus transit mode share for new Project-generated trips.

Regarding light-rail transit, the ENF models approximately 375 new Project-generated daily trips on the MBTA Green Line. To shorten the effective distance between the Green Line station entrance and the Project site and maximize transit utilization, the City is currently working with the Proponent to establish new public access points from the Project site to the Community Path / station platform. Furthermore, the Proponent has committed to providing the City with a Green Line contribution payment consistent with City policy.

Real-time display of mass transit schedules and arrival information has been shown to increase transit utilization. The Project's approved Mobility Management Plan requires the Proponent to provide two real-time transit arrival information displays at the Project site. The City looks forward to detailed siting discussions with the Proponent in the local permitting process.

Bicycle Parking

The ENF notes that the Project will comply with City bike parking standards, with 40 long-term and 12 short-term parking spaces provided. Local zoning has specific requirements for bike parking in new development; the City looks forward to reviewing the Project's detailed proposals in the local entitlement process.

The Project's approved local Mobility Management Plan includes a provision that the Proponent will provide a standard Blue Bikes public bike share station. The City looks forward to detailed

siting discussions with the Proponent to determine the most accessible and useful station location on the Project site.

Pedestrian Environment

The ENF notes that the Project will upgrade pedestrian infrastructure, including reconstructing all adjacent sidewalks to provide 12' – 18' of sidewalk width. Creation of accessible, attractive sidewalk facilities is anticipated to encourage higher rates of mass transit utilization for Project-generated trips, since the new MBTA Green Line station is located approximately ¼ mile to the north of the Project site.

The Project proposes sidewalk amenities including traffic calming curb extensions, street trees, seating, lighting and furnishings consistent with City standards. The City applauds the Proponent's commitment to use bioretention planter elements to enhance the streetscape environment. In addition, new on-site public open space facilities are proposed, which will further enhance the pedestrian environment.

Bicycle Environment

The ENF's modelling anticipates that roughly 19% of Project-generated trips will be made by walking or bicycling. Between 2015 and 2019, the City and MassDOT implemented a series of low-cost buffered and protected bike lane facilities adjacent to the Brickbottom neighborhood on Medford Street, McGrath Highway and Washington Street. Additional protected bike facilities will be completed in 2021, including sidewalk-level protected lanes along Somerville Avenue and street-level protected lanes along Medford Street and Washington Street. The MBTA-constructed portion of the Community Path Extension will create an access point near the corner of Washington Street and Joy Street, offering connections to regional trail networks including the Charles River paths and the Minuteman Commuter Bikeway.

The ENF describes the Project's commitment to construct a northbound sidewalk-level protected bike facility on Chestnut Street to improve safety and comfort for people biking from the Project site. The City is currently working on a holistic plan for street design and reconstruction in the Brickbottom neighborhood, and anticipates that this proposed facility will complement the larger network of low-stress walking and biking facilities being envisioned. We look forward to more detailed review of the Proponent's Chestnut Street design in local permitting to ensure safe bike mobility.

Transportation Demand Management

The ENF notes the Proponent's commitment to Transportation Demand Management strategies, and Section 3.1.3.1 provides a list of anticipated measures. The City notes that this list includes a firm commitment to unbundled, market-rate parking for any motor vehicle parking created by the Project. Parking supply and policy is increasingly recognized as the most important determinant in travel behavior of new workers and residents in new development. The City

looks forward to continuing review of the Project's motor vehicle parking supply and management strategies in local zoning review.

Other TDM strategies listed as commitments include on-site mobility coordinator, real-time transit screen, guaranteed ride home programming, and use of employee benefits including subsidized transit passes. The Project's local Mobility Management Plan (MMP), which represents as an enforceable condition of local zoning permits, includes provision of 90% subsidized MBTA passes for tenant employees and 100% subsidized Blue Bikes public bikeshare membership for tenant employees. The City applauds the Proponent for these progressive commitments to implementing best-in-class Transportation Demand Management measures.

The ENF notes that the Proponent will join a new Transportation Management Association (TMA) upon its formation for the Union Square / Boynton Yards / Brickbottom districts. This commitment is consistent with the Project's approved local Mobility Management Plan conditions. The City looks forward to partnering with the Proponent and other stakeholders to establish and run a new TMA to deliver cost-effective and coordinated TDM programming.

Wastewater Generation

The ENF acknowledges that the Project exceeds the Somerville Water & Sewer Department sewer generation threshold thus triggering the City Inflow & Infiltration Policy. The Project will generate an increase of 26,620 GPD of sewer flows to the City system. The ENF also commits to developing an I/I mitigation plan in coordination of I&I Removal, but does not provide specific details for accomplishing required removal of I/I. The Proponent subject to the I/I Policy may elect to pay a fee based on the project's I/I mitigation requirement that will be deposited into a dedicated account that funds those projects. The per-gallon fee is established annually based on the program costs to remove I/I. The CY2018 I/I mitigation fee is \$14.35.

Groundwater

The Project proposes subsurface garage/basement that will be below seasonal high groundwater. Any permanent dewatering will need to be managed on-site by recharge and/or reuse. Groundwater may not be discharged to the municipal sewers.

Sustainability / Building Performance

This Project has taken several important measures to reduce its environmental impact and greenhouse gas emissions. The City's Office of Sustainability and Environment commends the specific focus on life cycle assessment to reduce embodied carbon emissions in the project. The building's large size, well over the 50,000 square feet threshold, triggers the zoning requirement to be LEED Platinum certifiable. In addition to meeting the LEED requirement, the City of Somerville encourages all projects to be designed to maximize electrification where possible to

minimize emissions and to future-proof the building for a fossil-fuel free future. The City will be looking for partial-electrification proposals and more details on the planned ECMs during the local permitting process.

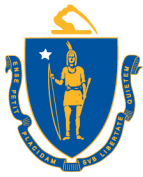
The large parking garage presents an opportunity to greatly expand electric vehicle charging access in Somerville. The City looks forward to seeing more detail on the proposed electric vehicle charging plans for this project during the local permitting process.

Thank you for the opportunity to comment on the 28 Fitchburg ENF. The City looks forward to continuing its collaboration with the Proponent and with all stakeholders in the MEPA process. Please do not hesitate to contact me with any question or concerns.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Brad Rawson', with a long, sweeping underline.

Brad Rawson
Director, Mobility Division
Mayor's Office of Strategic Planning & Community Development
City of Somerville, MA



Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Jamey Tesler, Acting Secretary & CEO



June 15, 2021

Kathleen Theoharides, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge Street, Suite 900
Boston, MA 02114-2150

RE: Somerville: 28 Fitchburg – ENF
(EEA #16377)

ATTN: MEPA Unit
Erin Flaherty

Dear Secretary Theoharides:

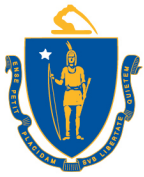
On behalf of the Massachusetts Department of Transportation, I am submitting comments regarding the Environmental Notification Form for the 28 Fitchburg project in Somerville as prepared by the Office of Transportation Planning. If you have any questions regarding these comments, please contact J. Lionel Lucien, P.E., Manager of the Public/Private Development Unit, at (857) 368-8862.

Sincerely,

David J. Mohler
Executive Director
Office of Transportation Planning

DJM/jll

cc: Jonathan Gulliver, Administrator, Highway Division
Carrie Lavallee, P.E., Acting Chief Engineer, Highway Division
Paul Stedman, District 4 Highway Director
Neil Boudreau, Assistant Administrator of Traffic and Highway Safety
Planning Department, City of Somerville
Boston Metropolitan Planning Organization



Charles D. Baker, Governor
Karyn E. Polito, Lieutenant Governor
Jamey Tesler, Acting Secretary & CEO



MEMORANDUM

TO: David Mohler, Executive Director
Office of Transportation Planning

FROM: J. Lionel Lucien, P.E, Manager
Public/Private Development Unit

DATE: June 15, 2021

RE: Somerville – 28 Fitchburg – ENF
(EEA #16377)

The Public/Private Development Unit (PPDU) has reviewed the Environmental Notification Form (ENF) for the proposed 28 Fitchburg project in Somerville. The project includes the construction of a commercial building that consists of approximately 199,200 square feet (sf) of office, research and development, and lab enabled uses (“office/R&D/lab”), tenant amenity space and accessory retail space, and approximately 241 parking spaces (the “Project”). The Project Site is bordered by Chestnut Street to the west, Fitchburg Street to the south, the Massachusetts Bay Transportation Authority (MBTA) property to the east, and a parking lot to the north.

The Project is estimated to generate 2,460 unadjusted new vehicle trips per day based on ITE Land Use Codes (LUC) 760 (Research & Development Center), LUC 710 (General Office), and LUC 820 (Shopping Center). The Project triggers the MEPA ENF threshold for trip generation and parking spaces at a single location and requires a Chapter 40 Section 54A Approval for Construction on Former Railroad Property.

The ENF includes a Transportation Impact Assessment (TIA) that is in general conformance with the current MassDOT/EOEEA *Transportation Impact Assessment Guidelines*. The ENF provides an analysis of the project’s transportation impacts and identifies a comprehensive multimodal package of site improvements to improve bicycle, transit, and pedestrian access and safety in the area. MassDOT and the MBTA offer the following comments:

Trip Generation

Based on the information presented in the ENF, the Project would generate 2,460 unadjusted vehicle trips with 84 vehicle trips in the morning peak hour and 108 vehicle trips in the afternoon peak hour. The trip generation was refined based on proposed mode share data presented in multiple transportation studies in the area, including the Union Square Neighborhood Plan and the US2 development traffic study, and adjusted to account for Project Site location and the surrounding transportation network, including the Green Line

Extension (GLX) project. When adjusted, the Project is expected to generate a net increase of approximately 1,252 new daily vehicle trips, with approximately 114 net new vehicle trips during the morning peak hour and 126 net new vehicle trips during the evening peak hours. Similarly, the Project is projected to generate a net increase of approximately 938 new daily transit trips, with approximately 83 new transit trips during the morning peak hour and 94 new transit trips occurring during the evening peak hours. The Project is also expected to generate 575 Bike/Walk trips, with approximately 51 new trips during the morning peak hour and 59 new trips during the evening peak hour. MassDOT finds the methodology used and the resulting mode share splits acceptable.

Traffic Operations

The TIA does not present capacity analyses and a summary of average and 95th percentile vehicle queues for the intersection within the study area. Most of these intersections are under the jurisdiction of the City of Somerville and are not expected to experience a significant change of levels of service (LOS) or delay during the weekday morning and afternoon peak hours due to the low volume of site trip generation.

Public Transportation

The area of the Project site is well served by public transportation: future GLX service station will be provided at the new East Somerville Station which will be accessed via Washington Street, just under one-half mile walking distance. The Project Site is also served by the MBTA Bus Routes 80, 86, 87, 88, 91 and CT2. The ENF includes a comprehensive transit analysis of the different transit services that surround the site. The TIA includes a detailed presentation of the impacts to the transit system with summary tables for the anticipated demand in terms of MBTA Service Delivery Policy (SDP) for transit and bus services. The TIA has also completed a capacity analysis of the peak periods for the Medford Branch of the GLX. According to the analyses, both the transit lines and the bus routes surrounding the site are expected to see minimal impact to the system based on the additional transit trips generated by the Project. The Proponent has noted that Bus Routes 86 and 87 would experience one and two trips respectively that, on average, have passenger loads that exceed the MBTA's SDP passenger crowding threshold; however, these conditions are expected to occur with or without the Project.

Pedestrian and Bicycle Access

The Proponent has adequately addressed how the site would be made accessible and friendly to bicycles and pedestrians. New and improved sidewalks are proposed along the Project Site frontage which will improve existing deficiencies for pedestrians. Streetscape and bicycle accommodations are also proposed along the Project Site frontage which will enhance the pedestrian and bicyclist experience through the surrounding neighborhood. Specific bicycle accommodations include a northbound one-way protected cycle track on Chestnut Street along the Project Site frontage. Within the Project Site, 12 short-term bicycle spaces

(bike racks along the sidewalk) and 40 long-term secured bicycle spaces will be provided (located inside the building).

Transportation Demand Management

The ENF includes a detailed and comprehensive program of TDM measures aimed at reducing site trip generation. The Proponent will work with the City of Somerville to implement the TDM plan. Some TDM measures to be implemented include:

- Provision of information on and marketing of transit services (including via a project website);
- Membership in a future TMA;
- Provision of orientation packets containing multimodal information to tenants;
- Provision of bicycle storage in secure, sheltered areas and bicycle racks for visitors near building entrances;
- Unbundled parking; and
- Designation of a transportation coordinator to oversee transportation issues.

MassDOT recommends that no further environmental review be required based on transportation issues. The Proponent should continue coordination with MassDOT to obtain the Chapter 40 Section 54A approval. If you have any questions regarding these comments, please contact me at *Lionel.Lucien@state.ma.us*.



MASSACHUSETTS WATER RESOURCES AUTHORITY

Charlestown Navy Yard
100 First Avenue, Building 39
Boston, MA 02129

Frederick A. Laskey
Executive Director

Telephone: (617) 242-6000
Fax: (617) 788-4899
TTY: (617) 788-4971

June 15, 2021

Kathleen A. Theoharides, Secretary
Executive Office of Energy and Environmental Affairs
100 Cambridge St, Suite 900
Attn: MEPA Office, Erin Flaherty
Boston, MA 02114

Subject: EOEEA #16377 – Environmental Notification Form
28 Fitchburg, Somerville

Dear Secretary Theoharides,

The Massachusetts Water Resources Authority (MWRA) appreciates the opportunity to comment on the Environmental Notification Form (ENF) submitted by Brickbottom I QOZB LP (the "Proponent") for 28 Fitchburg (the "Project") in Somerville, Massachusetts. The Project site is bordered by Chestnut Street to the west, Fitchburg Street to the south, MBTA Green Line Extension project property to the east, and a parking lot to the north. The Project site is located in the Brickbottom neighborhood of Somerville and contained recently demolished warehouses. The Project involves construction of a pedestrian and transit oriented commercial building to include office, research and development space, laboratory space, tenant amenity space and accessory retail space as well as 241 parking spaces in both at and below grade parking garages.

MWRA's comments on the ENF relate to wastewater issues and the need for Infiltration/Inflow (I/I) Removal as well as Discharge Permitting from the Toxic Reduction and Control (TRAC) Department.

Wastewater

The ENF reports that the Project will generate wastewater flow of approximately 26,800 gallons per day (gpd), an increase of 26,620 gpd over the estimated existing wastewater generation of 180 gpd. The ENF states that there is an existing 12-inch separate sewer that flows north in Chestnut Street to Poplar Street and discharges to the MWRA's Cambridge Branch Sewer at McGrath Highway/Somerville Avenue Extension. The 12-inch sanitary sewer ties into MWRA's Cambridge Branch Sewer at CSO regulator SOM009, which conveys flows to MWRA's DeLauri Pump Station and North Metropolitan sewer system for transport to the Deer Island Treatment Plant. In large storms, flows exceeding the capacity of the Cambridge Branch Sewer can overflow at regulator SOM009 to the 84-inch Monsignor O'Brien Highway Conduit (owned jointly by Somerville and Cambridge), which transports the overflows to MWRA's

Prison Point CSO treatment facility. Combined flows to the Cambridge Branch Sewer from Somerville, as well as Cambridge and Boston, can also contribute to untreated CSO discharges to the Charles River and the Mystic River in larger storms.

To ensure that the Project's new wastewater flow does not increase system surcharging and overflows in large storms and does not compromise the water quality benefits of MWRA's recently completed \$912 million region-wide CSO control program, the Proponent should fully mitigate the Project's wastewater flow impacts with infiltration/inflow ("I/I") or stormwater removal in compliance with Massachusetts Department of Environmental Protection ("MassDEP") regulation and City of Somerville I/I policy.

The ENF states that the Somerville Engineering Department administers the City's Inflow and Infiltration (I/I) mitigation program under a municipal policy that requires all new sewer connections or expansions of existing connections that exceed 330 gallons per day of wastewater to mitigate the impacts of the development by removing four gallons of I/I for each new gallon of wastewater flow. In accordance with the policy, the Project proponent may elect to pay a fee based on the Project's I/I mitigation calculation to the municipal fund dedicated for the City's I/I removal projects. The ENF states that the Proponent will comply with the City's I/I Policy by paying the fee into the dedicated fund.

TRAC Discharge Permitting

Pursuant to 360 C.M.R. 10.091-10.094, a Temporary Construction Dewatering Permit is required prior to the discharge of groundwater from any construction sites associated with the Project into the sanitary sewer system. For assistance in obtaining a permit, both the Proponent and the Contractor should contact Stephen Buczko, Industrial Coordinator in the TRAC Department at 1 (617) 305-5666.

A Sewer Use Discharge Permit is required prior to discharging laboratory wastewater, research and development wastewater, photoprocessing, and/or industrial process wastewater from laboratory or commercial space associated with the Project into the MWRA sanitary sewer system. For assistance in obtaining this permit, representatives from the proposed laboratory and commercial space should contact Stephen Buczko, Industrial Coordinator, in the TRAC Department at (617) 305-5619.

Any gas/oil separators in parking garages associated with the project must comply with 360 C.M.R. 10.016 and State Plumbing Code. The installation of the proposed gas/oil separators may not be back filled until inspected and approved by the MWRA and the Local Plumbing Inspector. For assistance in obtaining an inspection the Proponent should contact John Feeney, Source Coordinator, at (617) 305-5631.

On behalf of the MWRA, thank you for the opportunity to provide comments on this Project. Please do not hesitate to contact Katie Ronan of my staff at (857) 289-1742 with any questions or concerns.

Sincerely,

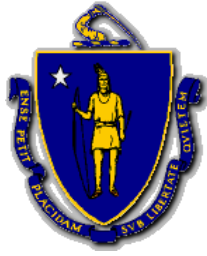
A handwritten signature in black ink, appearing to read 'Rebecca Weidman', with a long horizontal flourish extending to the right.

Rebecca Weidman

Director

Environmental and Regulatory Affairs

cc: John Viola, MassDEP
Rich Raiche, City of Somerville
Jessica Fosbrook, City of Somerville
Brian Postlewaite, City of Somerville



COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF
ENERGY AND ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENERGY RESOURCES
100 CAMBRIDGE ST., SUITE 1020
BOSTON, MA 02114
Telephone: 617-626-7300
Facsimile: 617-727-0030

Charles D. Baker
Governor

Karyn E. Polito
Lt. Governor

Kathleen A. Theoharides
Secretary

Patrick Woodcock
Commissioner

14 June 2021

Kathleen Theoharides, Secretary
Executive Office of Energy & Environmental Affairs
100 Cambridge Street
Boston, Massachusetts 02114
Attn: MEPA Unit

RE: 28 Fitchburg, Somerville, MA, EEA #16231

Cc: Maggie McCarey, Director of Energy Efficiency, Department of Energy Resource
Patrick Woodcock, Commissioner, Department of Energy Resources

Dear Secretary Theoharides:

We've reviewed the Environmental Notification Form (ENF) for the proposed project. The project includes a 4-story 199,200-sf lab/office building with some retail space. The objective of this letter is to share strategies for the project to reduce greenhouse gas emissions (GHG) while also improving resiliency and affordability.

Key Strategies

Deployed together, the following have been found to be effective strategies in advancing emission reduction, resilience, and affordability:

- Building design and construction practices that result in low heating and cooling thermal energy demand intensity (heating and cooling "TEDI") by:
 - o Maintaining envelope integrity with framed, insulated walls with continuous insulation;
 - o Thermally-broken windows and other components to eliminate thermal bridges;

- o Minimizing glass curtain wall assemblies and excessive windows;
 - o Low air-infiltration, confirmed with in-building air-infiltration testing;
 - o Energy recovery;
 - o Management of solar heat gains;
- Efficient electrification of space heating, including:
 - o For highly ventilated lab office (including speculative core-and-shell developments): low temperature, hydronic space heating with heat-input provided by hybrid, in-building, central plant consisting of air-to-water heat pump (primary) and gas boilers (secondary);
- Efficient electrification of water heating, where feasible;
- Extensive rooftop solar-readiness;
- Electric vehicle ready parking spaces.

Experience has shown that the above deliver 50 to 80% less emissions than projects built to Code while improving affordability and resilience. In addition, significant incentives may be available including MassSave[®] incentives, Alternative Energy Credits (AECs), and Solar Massachusetts Renewable Target (SMART) credits.

Envelope, Heat Recovery, and Solar Gains

The combination of quality envelope, heat recovery, and management of solar gains can result in significant reduction in heating (and cooling) thermal energy demand intensity (TEDI, units of kBtu/sf-yr)¹. In addition to reduced utility costs and emissions, the value of a targeted focus on heating and cooling TEDI results in:

- Simplified space heating electrification;
- Reduction, and possible elimination, of perimeter heating systems;
- Improved resiliency;
- Reduced peak demands;
- Improved occupant comfort;
- Reduced maintenance.

Specific TEDI reduction strategies are:

¹ Although they have the same units, heating and cooling TEDI is not the same as heating and cooling EUI. TEDI represents energy requirement, or demand, not energy consumption. For guidance on how to extract TEDI information from building models see “Energy Modeling Guidelines”, City of Vancouver, Planning, Urban Design and Sustainability Department, Land Use Development and Policy Guidelines, Version 2.0, amended 18 July 2018 and “Designing to TEDI, TEUI, and GHGI Performance Metrics”, International Building Performance Simulation Association (IBPSA), by Chan *et al*

- High-performance window and walls;
- Thermal-broken windows and components to eliminate thermal bridges;
- Low air-infiltration;
- Ventilation heat recovery;
- Solar gain management via external shading and/or low solar heat gain coefficient (SHGC)

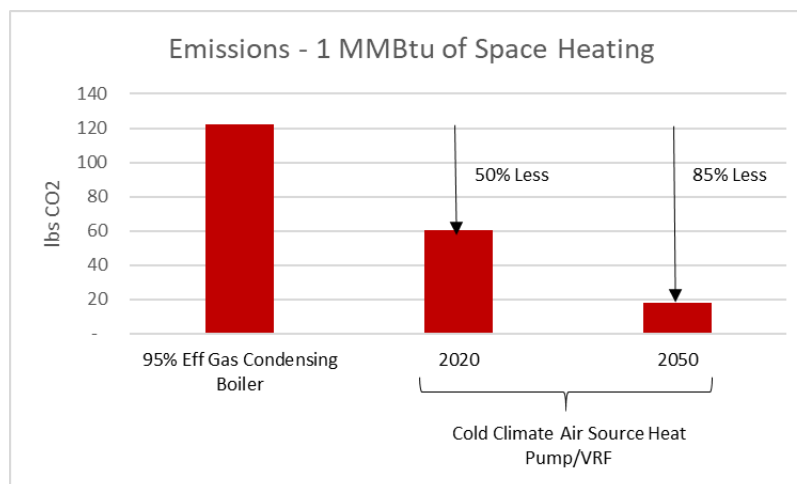
Buildings with curtain wall envelope require high performing windows and high performing opaque spandrels to achieve heating TEDI reductions. High performing windows and high performing opaque spandrels should be carefully evaluated if curtain-wall construction is considered.

Efficient Electrification – Space Heating

Efficient electrification of space heating entails the swapping of fossil fuels (natural gas, oil, and propane), or electric resistance systems, with cold-climate rated air source heat pumps or ground source heat pumps.

Electrification of space is a key mitigation strategy with significant short- and long-term implications on GHG emissions. Massachusetts grid emissions rates continue to decline with the implementation of clean energy policies that increase renewable electricity sources. The implication is that efficient electric space heating with cold climate air source heat pump (or ground source heat pump) has lower emissions than other fossil-fuel based heating options, including best-in-class (95% efficient) condensing natural gas equipment.

Currently, efficient electric heating has approximately **50% lower emissions** in Massachusetts than condensing natural gas heating. By 2050, and possibly sooner, efficient electric heating is expected to have approximately **85% lower emissions** in Massachusetts than condensing natural gas heating. See illustration below.



DOER recommends efficient electrification of space heating for all new construction.

Electrifying Space Heating: Lab/Office Buildings

Lab/office buildings typically have high ventilation loads which has made electrification of space heating a challenge in the past, particularly in a speculative core/shell project. However, DOER is aware of highly-ventilated, speculative core and shell lab/office projects that are pursuing a pathway to partially electrify space heating. The approach uses a hybrid of air to water (or ground to water) heat pumps with gas equipment as backup in which the heat pump can provide 80-90% total annual heating end use.

Key strategies for this hybrid approach are as follows:

- Include a hot water distribution loop of 120°F;
- Include an in-building, centralized heating plant consisting of an air-to-water (or ground-to-water) heat pump and a gas-fired condensing boiler;
- Size the boiler for 100% of the peak load; size the air source heat pump for 25% to 50% of the peak load;
- Prioritize the heat pump operation first and utilize boiler only when loads exceed 25-50% of peak. The objective is to provide 80-90% of the total annual heating with air source.

A hybrid approach like this may provide a feasible means to partially electrify space heating of highly ventilated lab/office building, including speculative core/shell projects.

Efficient Electrification – Service Water Heating

Similar to above, due to Massachusetts low electric grid emissions, even swapping from best in class condensing gas to heat pump service water heating results in significant emissions reduction. However, heat pump service water heating is challenging in some building settings.

Service water heating

Lab/office buildings typically have low service water loads, compared to residential building uses. Heat pump service water heating using packaged air source heat pump equipment is potentially feasible. Such units can be distributed throughout the buildings at or near the service water points of use. If water usage is low, we recommend this approach for those building types.

Alternatively, if the lab/office buildings have higher water loads and/or limited interior space to locate packaged heat pump water heating equipment near point of use. Alternative approaches in these applications include:

- *Centrally located air source water heating:* These systems consist of centrally located heat pumps, usually with the compressors outdoors, which provide hot water to water distribution piping to the end use locations. These are usually engineered solutions with less packaged equipment options.

- *Condensing gas hot water heaters:* These systems consist of either centrally located, or distributed, natural gas fired heating equipment. Centrally located equipment is preferable as it allows an opportunity to swap to heat pump water heating in the future.
- Some combination of above.

We recommend the above be evaluated, with a priority toward heat pump water heating.

Solar PV

Rooftop PV can provide significant GHG benefits as well as significant financial benefits. The project should review opportunities to maximize on-site PV by setting aside as much roof space as possible for future rooftop PV.

Even if PV is not installed during building construction, it is important to plan the project to ensure that roof space is set aside for PV and that roof space doesn't become unnecessarily encroached with HVAC appurtenances, diminishing the opportunities for future PV. Electrification of heating and Passivehouse can both contribute to enabling more PV as these approaches can reduce rooftop equipment associated with conventional code HVAC.

Electric Vehicle (EV) Ready Parking Spaces

EV charging stations are critical for the continual transition towards electric mobility. Even if EV charging stations are not installed during construction, it is critical to maximize EV-ready spaces as it is significantly cheaper and easier to size electrical service and install wiring or wiring conduit during construction, rather than retrofitting a project later.

We encourage the project to maximize EV-ready parking spaces for the project.

Incentives

Buildings which incorporate the above strategies can qualify for significant incentives:

- MassSave performance-based incentives² offer incentives for every kWh or therm saved compared to a program-provided energy model. The above energy efficiency strategies offer opportunities for large kWh and therm savings.
- Alternative Energy Credits (AECs)³ offer incentives to electrify building space heating using heat pumps and/or VRF. These credits may be distributed on a quarterly basis over time; or, may be distributed in a lump sum to the developer if certain conditions are met.

² <https://www.masssave.com/en/saving/business-rebates/new-buildings-and-major-renovations/>

³ <https://www.mass.gov/guides/aps-renewable-thermal-statement-of-qualification-application>

- Massachusetts SMART program⁴ provides significant incentives for solar development on top of federal and state tax incentives. SMART includes pathways which allow solar production to be sold without off-takers. This may be of potential interest to building developers as this allows them to develop rooftop solar without necessarily engaging with building tenants. For this reason, setting aside rooftop solar PV areas helps ensure that building owners' ability to monetize the roof is not impacted.

Codes and Baseline

Massachusetts Stretch Code applies to this project. Stretch Code requires a 10% energy performance improvement over ASHRAE 90.1-2013-Appendix G plus Massachusetts amendments including C402.1.5 (envelope), C405.3 and C405.4 (lighting), C405.10 (EV charging), and C406 (three additional efficiency measures).

Projects should include the three C406 additional efficiency measures in their Baseline.

Current Mitigation Measures & Preliminary Modeling

In response to a pre-filing meeting, the project notified MEPA that the building would utilize heat recovery chillers, which is a common approach in lab/office type buildings to reduce energy use. This is a first step towards analyzing the hybrid electric approach mentioned above. DOER recommends the proponent analyze a partial electrification scenario with heat pumps supplying ~20% of the space heating load while reviewing further opportunities to reduce GHG emissions.

Recommendations

The strategies described above provide pathways to GHG mitigation, increased affordability, and improve resiliency. The following are questions that should be considered throughout the planning process:

1. Did the project ensure Baseline building scenarios meet all requirements including relevant MA amendments? Three C406 measures should be used in the Baseline.
2. Did the building achieve at or above code level envelope? The building can confirm this by developing two UA analysis tables to ensure compliance, as follows:
 - a. One table that shows how the baseline complies with Table 5.5-5 of ASHRAE 90.1 2013 Appendix G plus Massachusetts Amendment C401.2.4. Fenestration limits will vary depending upon building type.
 - b. A second table that shows how the proposed complies with 2018 IECC Tables C-402.1.3, C402.1.4, and C-402.4. Fenestration limit should be 30% when calculating minimum performance requirements for all building types.

⁴ <https://www.mass.gov/solar-massachusetts-renewable-target-smart>

3. Were strategies to reduce TEDI considered? A combination of high-performing envelope, heat recovery, and solar gain management should be used throughout with an aim toward reducing heating TEDI. Strategies to achieve this include:
 - a. *Above code-threshold envelope* (vertical walls, windows, roofs and exposed lower level floors). Priority should be given to increasing continuous insulation and framed insulated wall sections.
 - b. *Glass curtain wall/spandrel systems* should be minimized as much as possible, and avoided where possible, as these are the lowest performing wall systems.
 - c. *Reduce air infiltration to Passivehouse levels to 0.08 cfm at 75 Pa.* In-building field tests are recommended to confirm air-infiltration.
 - d. *Ventilation Energy Recovery.* High performing energy recovery is essential to achieving low TEDI.
 - e. *Solar gain management.* Manage solar gains with external shading and/or low solar heat gain coefficient (SHGC).
4. Was efficient electrification considered? Opportunities for air to water systems should be considered for the building.
5. Did the project evaluate incentives? Including:
 - a. Estimate of Alternative Energy Credits;
 - b. Estimates of MassSave[®] incentives, based on meeting with utility.
6. Did the project set-aside as much space as possible for rooftop PV? It is important to set-aside roof space for PV early to ensure that mechanical equipment spacing is designed to maximize rooftop space. A target of 80% roof set-aside is generally achievable.
7. Did the project maximize EV-ready parking spaces? It is important to maximize EV Ready parking spaces as it is much easier to size the electrical service and run conduit for future EV parking during new construction rather than retrofit in the future.
8. Furthermore, integration of these recommended measures has compounding and interrelated benefits. For example: the adoption of an above code building envelope and air-sealing measures greatly improve the feasibility and economics of an all-electric space heating system; electrification reduces rooftop equipment; inclusion of solar PV in a project improves the economics of efficient electrification of space and water heating. Accordingly, these solutions should be considered as a package rather than in isolation.

The following scenario is an example of a integrated approach of the above strategies.

- a. Improved envelope and inclusion of energy recovery to achieve heating TEDI reduction. Downsize the HVAC as much as possible, including evaluating

28 Fitchburg, EEA #16231
Somerville, MA

perimeter heating elimination. In-building, centrally-located hybrid efficient electric space heating (air to water heat pump sized at 25 to 50% peak heating capacity as priority backed-up with 95% efficient gas boiler sized at 100% peak, connected to 120°F thermal distribution hot water loop). External shading and improved solar heat gain coefficient windows to control space cooling loads. Energy reduction shall be attributable to reductions in heating, cooling, fan, ventilation, and pumping.

Sincerely,

A handwritten signature in black ink, appearing to be 'P. Ormond', with a stylized, flowing script.

Paul F. Ormond, P.E.
Energy Efficiency Engineer
Massachusetts Department of Energy Resources

A handwritten signature in black ink, appearing to be 'B. Place', with a stylized, flowing script.

Brendan Place
Clean Energy Engineer
Massachusetts Department of Energy
Resource