Sustainable & Resilient Development Questionnaire

The purpose of this Questionnaire is to minimize the adverse environmental impacts in the design, construction, and occupancy of development in Somerville and to ensure that the impacts of future climate conditions are carefully evaluated. Please refer to the Development Review Sustainability Submittal Requirements on the OSE website (https://www.somervillema.gov/departments/office-sustainability-and-environment) to determine whether your project requires a Sustainable and Resilient Development Questionnaire. It is strongly recommended that applicants meet with staff from the Office of Sustainability and Environment (OSE) prior to submitting a Development Review Application. Please contact OSE at ose@somervillema.gov to schedule a meeting.

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Section 1: General Information

1.1 Project Name *

33 Mystic Ave

1.2 Permit # *

1.3 Project Address *

33 Mystic Ave

Street Address

Street Address Line 2

Somerville

City

MA

State / Province

02145

Postal / Zip Code

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1.4 Project Applicant *

Pablo Picker & Shelley Cates

First Name

Last Name

1.5 Applicant Email *

pickerconstruction@gmail.com

example@example.com

1.6 Applicant Phone Number *

617-888-0552

(000) 000-0000

Please enter a valid phone number.

1.7 Applicant Business Address *

33 Mystic Ave

Street Address

Street Address Line 2

Somerville

City

MA

State / Province

02145

Postal / Zip Code

1.8 Filing Type *

Please Select

1. SITE PLAN APPROVAL

1.9 Is this a revised questionnaire? *

- Yes
- [X] No

1.10 Is Massachusetts Environmental Policy Act (MEPA) approval required? *

- Yes
- [X] No

1.11 If MEPA approval is required, why? This project triggers (per section 11.03 of MEPA): *

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- [ ] Land Thresholds
- [ ] State-listed Species Thresholds
- [ ] Wetlands, Waterways, and Tidelands Thresholds
- [ ] Water Thresholds
- [ ] Wastewater Thresholds
- [ ] Transportation Thresholds
- [ ] Energy Thresholds
- [ ] Air Thresholds
- [ ] Solid and Hazardous Waste Thresholds
- [ ] Historical and Archaeological Resources Thresholds
- [ ] Areas of Critical Environmental Concern Thresholds
- [x] Not Applicable

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Section 2: Building and Site Details

2.1 Building Type *

Please Select

General Building

2.2 If you selected General Use, is the building mixed-use? *

- ( ) Yes
- ( ) No
- (X) Did not select General Use

2.3 Gross Floor Area *

e.g., 23 12067sf

Including square footage of parking areas

2.4 Expected Building Life *

e.g., 23 100

2.5 How many housing units are included in this project? *

e.g., 23 8

2.6 How many housing units will be designated affordable in this project? *

e.g., 23 1.6

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2.7 Please describe the building heating plant and distribution system. *

Ephoca vertical stack air source heat pump in each DU, in common spaces and commercial space.

2.8 Please describe the building cooling plant and distribution system. *

Air source heat pump in each DU. Air source HP in common spaces and commercial space.

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2.9 Please describe the building ventilation system. *

ERVs integrated with the HP in each residential unit, common space and commercial space.

2.10 Please describe the building domestic hot water system. *

Electric resistance hot water heater for each unit and commercial space

2.11 Green Building Professional Name *

Agnes

First Name

Vorbrodt

Last Name

2.12 Phone Number *

(000) 000-0000 617-898-8995

Please enter a valid phone number.

2.13 Email *

agnes@ava-greenconsultant.com

example@example.com

2.14 Certifications of Green Building Professional *

NCARB,LEED AP,WELL AP,CBCP,BECxP,CxA+BE, Fitwel Ambasador

2.15 Please select all green building certifications being pursued for this project. *

- [ ] LEED Gold
- [ ] LEED Platinum
- [x] Passive House
- [ ] Enterprise Green Communities
- [ ] Not applicable
- [ ] Other

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2.16 Does your project have a Mobility Management Plan? *

- ( ) Yes
- (X) No

2.17 Total number of parking spaces *

e.g., 23 0

2.8 Electric Vehicle (EV) Charging Station Ports (number of charging ports) *

e.g., 23 0

2.19 EV Charging Station Level *

- ( ) Level 2
- ( ) Level 3
- ( ) Other

2.20 Number of EV Ready Spaces *

e.g., 23 0

EV Ready means that there are no EV charging stations installed, but pre-wiring has been completed for installation of future stations.

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Section 3: Net Zero Building Compliance

The City of Somerville encourages projects to eliminate fossil fuels in their building operations. A net-zero carbon building is a highly energy efficient building that does not burn fossil fuels and either produces or procures enough carbon-free electricity to meet the building's total energy demand.

3.1 Will the building be a net zero carbon building? *

- ( ) Yes
- (X) No

3.2 If the building will not be a net-zero carbon building, provide a technical description of how the building's systems will be transitioned over time to achieve net-zero carbon emissions, including how and when systems can be transitioned in the future to carbon-free alternatives (provide timeline including 2030, 2040, and 2050 targets). Description must include whether any remaining emissions will be offset with on-site or off-site renewables and at what quantity. *

The project is fully electric with highly efficient mechanical systems and superior envelope. In the future, the project may further reduce its carbon footprint by engaging in a procurement contract with the Somerville Local Green or 100% Local Green Community Choice Electricity program.

Changes could include, but are not limited to, the addition of on-site renewable energy generation, energy storage, additional energy efficiency measures, building electrification, or other measures that would further reduce greenhouse gas emissions.

3.3 Please explain the proposed building's electric heating/cooling system capacity and efficiency. Will these systems be electric? Provide reasoning for selection of heating and cooling systems to reduce energy usage. *

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The building will be fully electric to contribute to the Somerville decarbonization goals and to meet the requirements of the Opt-In Code. The heating and cooling will be provided by Ephoca vertical stack air source heat pumps with integrated ERVs - this selection will allow for high efficiency as well as eliminate the need for outdoor units hence ensuring rooftop space for roof deck and green roof.

If the project intends to incorporate fossil fuels or mixed fuels, please provide a rationale below and explain provisions that your project is taking to electrify base building systems in the future.

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3.4 Please describe how the design team has integrated energy performance into the building design, site design, and engineering (including roof, foundations, walls and window assemblies, envelope performance, orientation, massing, mechanical systems, envelope, etc.) to reduce energy usage. *

The project will pursue the Passive House certification hence energy efficiency has been the main focus from the inception of the project. The building will include a superior, air tight envelope with Passive House detailing and triple glazed windows. Mechanical systems will be highly efficient, integrated and all electric. The building massing is compact, WWR is optimized to ensure energy efficiency while providing ample daylight to the units.

3.5 Will any renewable energy generation be incorporated into the project? *

- ( ) Yes
- (X) No

3.6 If yes, please describe system type and capacity. If no, could/will it be added in the future? *

3.7 Will any off-site renewable energy be purchased? *

- ( ) Yes
- (X) No

3.8 Describe any and all incentives, rebates, and grants provided by utilities, government organizations, and other organizations being pursued to maximize building efficiency and to reduce emissions. *

The project will contact MassSave to pursue Passive House and other incentives.

Description must include any incentives that were considered but are not being pursued, including reasoning for each decision.

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Section 4: Climate Change Risk and Vulnerability

4.1 Climate Vulnerability Exposure (check all that apply). Please refer to Somerville's Climate Change Vulnerability Assessment and the Urban Flood Atlas for information and reference maps. *

- [ ] Sea Level Rise & Storm Surge
- [ ] Precipitation Induced Flooding
- [x] Extreme Heat
- [ ] Other

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Section 4.1: Managing Heat Risk

Heat Exposure risk maps can be found on pages 105 and 106 of Somerville's Climate Change Vulnerability Assessment.

4.1.1 Describe all building features that will keep building occupants safe and comfortable during extreme heat, including mechanical systems and non-mechanical design elements to cool building (orientation, envelope, operable windows, etc.). *

The building is located in the high indoor heat exposure area hence implemented numerous strategies aimed at keeping the occupants safe and comfortable during high heat events. The building is designed with compact massing, air tight and superinsulated envelope, balanced WWR to minimize unwanted heat gain/heat loss through the envelope. The mechanical systems are efficient, electrified and include air conditioning via ASHP in each unit, common space and commercial space to provide space conditioning to keep the residential cool during heat wave. The rooftop is covered by a cool roof and vegetation to reduce heat island effect and lower the cooling demand inside the building. The proposed ground level hardscape is minimized and light colored to reduce the heat island effect.

4.1.2 How has increased demand for indoor cooling been factored into the building design and energy management strategy? *

design and energy management strategy? *

The building elected and right-sized a highly efficient heat pump system and will ensure proper electrical service to serve this fully electric building.

4.1.3 List any indoor spaces without cooling and their uses. *

common corridors/stairs - circulation
transformer - mechanical/electrical
basement - storage

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4.1.4 What design features will be implemented on site to minimize the site's contribution to the urban heat island effect? Please describe any and all design elements. *

The project is designed to fill the entire site however the proponent proposed to perform sidewalk improvements around the building. The proposed sidewalk will be widened to allow for shade trees and other vegetation. Additionally, all hardscape will include materials with SR>0.33, for example light colored concrete and/or concrete pavers. The project selected MEP equipment with no outdoor units hence freeing up the roof space for roof deck and vegetation. The remainder of the roof will be covered by white TPO or EPDM membrane with SRI>82. The roof deck material will feature materials with high SRI, for example light colored wood.

Strategies could include, but are not limited to, the following: High albedo pavement or roof materials, Passive cooling or increased ventilation capacity, green roofs or walls, heat resistant trees and plants, and additional landscaped areas.

Section 4.2: Managing Flood Risk

High resolution GIS maps are available through the Urban Flood Atlas at

High resolution GIS maps are available through the Urban Flood Atlas at www.somervillezoning.com/developmentreview

4.2.1 Is the site susceptible to flooding from sea level rise and storm surge and/or rain events now or during the building's expected lifetime? Please refer to the Somerville Climate Change Vulnerability Assessment and Urban Flood Atlas. *

- ( ) Yes, sea level rise/storm surge
- ( ) Yes, precipitation induced flooding
- ( ) Yes, sea level rise, storm surge, and precipitation induced flooding
- (X) No

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4.2.2 Proposed Site Elevation - Low (in feet) *

e.g., 23 30.79'

4.2.3 Proposed Site Elevation - High (in feet) *

e.g., 23 32.39'

4.2.4 Lowest Elevation of Life-Safety Systems (in feet) *

e.g., 23 20.8'

4.2.5 Proposed First Floor Elevation (in feet) *

e.g., 23 30.8' at residential entry and commercial space entry, 32' at transformer/stair entry

4.2.6 Nearest flood depth for the 2070 10-year storm *

e.g., 23

The project is located at zero flood depth however it is surrounded by adjacent areas with floor depth between 0.5 to 2ft along the Assembly Sq Rd

4.2.7 Nearest flood depth for the 2070 100-year storm *

e.g., 23

The project is located at zero flood depth however it is surrounded by adjacent areas with floor depth between 0.5 to 3+ft along Sherman St and Assembly Sq Rd

4.2.8 What are the first-floor uses of the building? *

Residential lobby with bike storage, commercial space and transformer room.

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4.2.9 Are there any below ground stories of the building? *

- [x] Yes
- [ ] No

4.2.10 If yes, what uses are located below ground? *

Basement - storage and trash/recycling
Water room - sprinkler system

4.2.11 Are there any flood-sensitive assets, utilities, mechanical equipment, or life-safety systems located in areas of the building that are at risk of flooding? *

- [x] Yes
- [ ] No

4.2.12 If yes, what measures will protect building systems during a flood or severe storm? *

The transformer will be installed on a raised pad.
The project will install the wastewater back flow preventer and stormwater back flow preventer, utility conduits will be watertight

These might include, but may not be limited to, the following: elevation of utilities and mechanical systems, watertight utility conduits, wastewater back flow prevention, stormwater back flow prevention, systems located above the ground floor, securing objects at risk of becoming dislodged, etc.

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4.2.13 Residential and commercial buildings should be designed to maintain regular operations during a 10-year storm in 2070. Describe how the site and building have been designed to maintain regular operations - meaning all systems will remain operational and all occupied spaces are protected from flooding - during the 2070 100-year storm. Please refer to both the 2070 coastal flood probability map and the 2070 100-year storm and 1-year sea level rise scenario. *

Wet flood proofing

Resilience measures might include, but may not be limited to, the following: elevation of the site, structural elevation of the building, non-structural elevation of the ground floor, energy storage and backup generation, wet flood-proofing (allowing water to flow through building envelope), dry flood-proofing (preventing water from entering building).

4.2.14 How will your site and building be designed to protect against the impacts of the 2070 100-year, 24-hour storm? Please evaluate impact based on both the 2070 coastal flood depth model for the 100-year storm and the 2070 100-year, 100-year sea level rise model. Summarize anticipated pre- and post-event policies, strategies, and actions necessary to facilitate post-flood recovery. *

According to the published maps,
https://www.somervillezoning.com/wp-content/uploads/sites/2/2022/07/UrbanFloodAtlas.pdf
the project is located outside of the flood extend of the 10-year and 100-year 24-hour storm with storm surge.
However due to its close proximity to these areas, the project implemented resiliency measures to protect its occupants. Critical MEP services and all life-safety systems will be elevated to 100-year flood elevation

Residential buildings should be designed to allow occupants to shelter in place during a catastrophic storm (100-year event) today and in the future. This means all life-safety systems should be above the 2070 100-year flood elevation.

4.2.15 Will hazardous or toxic material be stored on site? *

- ( ) Yes
- (X) No

4.2.16 If yes, how will you protect hazardous or toxic material from flooding? *

4.2.17 Will the site be accessible by a typical vehicle during a 10-year event (up to 6 inches of water) and by emergency vehicles (up to 12 inches of water) during a 100-year event?

- (X) Yes
- ( ) No

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Section 5: Eversource Confirmation

This is the final section of this questionnaire. Questionnaire's will not be reviewed or accepted without the below confirmation. Electric plans from Eversource are not accepted for this item.

5.1 For buildings with more than four units or a gross floor area greater than 7,000 square feet, including parking: Per Eversource Information and Requirements for Electric Service, single phase services greater than 400amps or any 3-phase service requires private property transformation. Additionally, any building with more than four units requires Eversource review to determine the need for private property transformation. If your building is within these thresholds: Reach out to Eversource at 888-633-3797 to discuss your electrical service needs. Request, via email from Eversource, confirmation if private property transformation will be required. Attach a PDF of the email chain to this submission. *

Browse Files

Drag and drop files here

Electrical plans from Eversource will not be accepted.

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