DEVELOPMENT NARRATIVE

Property:	71-72 Union Square
Applicant/Owner:	Laxmi N. Pradhan, Trustee of Everest Realty Trust
Agent:	Adam Dash, Esq.
Zoning District:	CC4/MPD Overlay/USQ Sub-area/Pedestrian Street District
Case#:	CZC20-000039

The property is currently a 1,757 sf lot which has a one-story brick commercial structure.

Applicant seeks to add two commercial floors onto the existing structure, such that the building will be a three-story commercial structure with a basement. The first floor and basement would be cannabis retail sales, the second floor would be a community education/meeting space, and the third floor would be offices. The building floorplate would be 1,631 sf. There will be bicycle parking in the basement for 8 bicycles.

Applicant previously submitted an application for variances but, due to amendments of the Somerville Zoning Ordinance and revisions to the plans, Applicant no longer requires any variances. Applicant now seeks the following relief: (a) Site Plan Approval for modifications to the existing structure, and (b) a Special Permit for the cannabis retail sales use.

A. Site Plan Approval

Per Section 15.3.2.e of the Somerville Zoning Ordinance:

> *The review board shall approve an development review application requiring Site Plan Approval upon verifying that the submitted plan conforms with the provisions of this Ordinance and demonstrates consistency to the following:*
>
> *a). The comprehensive plan and existing policy plans and standards established by the City.*
>
> *b). The intent of the zoning district where the property is located.*
>
> *c). Mitigation proposed to alleviate any impacts attributable to the proposed development.*
>
> *d). Considerations indicated elsewhere in this Ordinance for the required Site Plan Approval.*

a. Applicant's proposal meets the requirements for a cannabis retail sales establishment as set forth in Section 9.2.4.d of the Somerville Zoning Ordinance. In addition, the City has created districts for the cannabis retail sales use, and has reviewed all applicants for

licenses in those areas through a City process designed to facilitate the establishment of such uses. This shows that the policy plans and standards as established by the City favor the creation of cannabis retail sales uses, in general and in this particular area, and that Applicant has met such policy plans and standards.

b. Per Section 6.2.1 of the SZO, the purpose of the Commercial Core (CC) district is "characterized by medium to large floor plate buildings at a variety of heights. Buildings are set close to the sidewalk and taller buildings have an upper story step-back to define a mid-rise street wall that supports pedestrian activity and a sense of place. The district is entirely commercial, with a wide diversity of uses". The CC4 zoning district was also recently amended to allow cannabis retail sales on ground floors facing Pedestrian Street Districts.

   The Property at issue fronts a Pedestrian Street District and meets the intent that cannabis retail sales uses are appropriate in such locations. The building will be entirely commercial, as is intended in the CC4 zoning district.

   By adding two floors to the existing single-story commercial structure, the Property better matches the intent of the CC4 zoning district by gaining height, by increasing pedestrian activity and by creating a sense of place.

c. The Property at issue is of a small size (especially when compared to the surrounding properties), and is hemmed in by buildings in the heart of Union Square, being by a two-story historic building (The Independent) and a three-story building (the Old Police Station). By being of an appropriate three-story size when compared to the abutting buildings, Applicant seeks to mitigate any negative impact on those abutters. The lower height and the design of the proposed building modifications also seek to mitigate any impact on the properties to its rear and to lower any traffic associated with the proposed uses.

d. The Property at issue also meets the requirements for a cannabis retail sales establishment as set forth in Section 9.2.4.d of the Somerville Zoning Ordinance, and provides needed meeting and office space in Union Square. A green roof will provide more nature in this dense, urban area. This increase in commercial space in a key commercial district like Union Square is a better use of the Property, and is better for the area, than the prior single-story structure.

B. Special Permit

Per Section 15.2.1.e of the Somerville Zoning Ordinance:

> *In its discretion to approve or deny a Special Permit required by this Ordinance, the review board shall make findings considering, at least, each of the following:*

a). The comprehensive plan and existing policy plans and standards established by the City.

b). The intent of the zoning district where the property is located.

c). Considerations indicated elsewhere in this Ordinance for the required Special Permit.

a. Applicant's proposal meets the requirements for a cannabis retail sales establishment as set forth in Section 9.2.4.d of the Somerville Zoning Ordinance. In addition, the City has created districts for the cannabis retail sales use, and has reviewed all applicants for licenses in those areas through a City process designed to facilitate the establishment of such uses. This shows that the policy plans and standards as established by the City favor the creation of cannabis retail sales uses, in general and in this particular area, and that Applicant has met such policy plans and standards.

b. Per Section 6.2.1 of the SZO, the purpose of the Commercial Core (CC) district is "characterized by medium to large floor plate buildings at a variety of heights. Buildings are set close to the sidewalk and taller buildings have an upper story step-back to define a mid-rise street wall that supports pedestrian activity and a sense of place. The district is entirely commercial, with a wide diversity of uses". The CC4 zoning district was also recently amended to allow cannabis retail sales on ground floors facing Pedestrian Street Districts.

   The Property at issue fronts a Pedestrian Street District and meets the intent that cannabis retail sales uses are appropriate in such locations. The building will be entirely commercial, as is intended in the CC4 zoning district.

   By adding two floors to the existing single-story commercial structure, the Property better matches the intent of the CC4 zoning district by gaining height, by increasing pedestrian activity and by creating a sense of place.

   The Urban Design Commission reviewed the current plans and approved of them.

c. The Property at issue also meets the requirements stated in Section 15.3.2.e of the Somerville Zoning Ordinance for Site Plan Approval, and provides needed meeting and office space in Union Square. A green roof will provide more nature in this dense, urban area. This increase in commercial space in a key commercial district like Union Square is a better use of the Property, and is better for the area, than the prior single-story structure.

Per Section 9.2.4.d.iv of the Somerville Zoning Ordinance:

In addition to the review criteria for all Special Permits specified in §15.2.1.e. Review Criteria, the review board shall make findings considering

the following in its discretion to approve or deny a special permit authorizing a cannabis retail sales principal use:

a). Capacity of the local thoroughfare network providing access to the site and impact on pedestrian, bicycle, and vehicular traffic and circulation patterns in the neighborhood.

b). Location, visibility, and design of the principal entrance.

a. The Property at issue is of a small size (especially when compared to the surrounding properties), and is hemmed in by buildings in the heart of Union Square, being by a two-story historic building (The Independent) and a three-story building. By being of an appropriate three-story size when compared to the abutting buildings, Applicant seeks to mitigate any negative impact on those abutters. The lower height and the design of the proposed building modifications also seek to mitigate any impact on the properties to its rear and to lower any traffic associated with the proposed uses. The location in Union Square has ready access by bicycle, bus and by the proposed Green Line station.

   Design Consultants, Inc.'s Traffic Impact Analysis and Transportation Access Plan are filed with this application.

b. The entrance faces the Pedestrian Street along a line of other commercial storefronts. It has a commercial-looking entry which is very visible in the heart of Union Square and which is accentuated by an awning to increase visibility, to denote the entry location, and to announce its commercial purpose.

   The Urban Design Commission reviewed the current plans and approved of them.

Charlotte Leis

From: Adam Dash <dash@adamdashlaw.com>
Sent: Monday, March 23, 2020 10:36 AM
To: Charlotte Leis
Cc: Sarah Lewis
Subject: Fw: 71-72 Union Square

Charlotte,

Below please find the email from Councilor Ewen-Campen regarding the neighborhood meetings on the project.

Does this suffice? It should be enough to show that we do not need a third neighborhood meeting.

Adam Dash, Esq.
Adam Dash & Associates
48 Grove Street, Suite 304
Davis Square
Somerville, MA 02144
(617) 625-7373 phone
(617) 625-9452 fax

From: Ben Ewen-Campen <benforward3@gmail.com>
Sent: Monday, March 23, 2020 10:17 AM
To: Adam Dash <dash@adamdashlaw.com>
Subject: Re: 71-72 Union Square

Dear Adam,

Below is copy-and-pasted from the comments I sent to the Licensing Commission on Oct 21, you are welcome to forward it (and/or this email) to Planning:

"3. Union Leaf Inc., 71-72 Union Sq. requesting approval for a Group A Priority, NEW Marijuana Retailer License
Hours of Operation: Mon. - Sat. - 10AM - 8PM & Sun. - 10AM - 5PM
(ME19-000008)

I've now held two Neighborhood Meetings regarding this proposal: first in March 2019, where the applicant outlined the basic proposal for the neighborhood (including their intention to seek a dispensary license and a Special Permit to add two floors onto the existing building), and more recently on October 9 2019, at the Somerville Police Station, which was noticed via certified mail and hand-delivered flyers - nothing of significance changed between these meetings, and **I am writing in support of this application**, based on a number of positive claims that the applicant has made in

public, and also based on the fact that I have seen the applicant engage in good faith with abutters and neighboring businesses, and I have not received any serious negative feedback on their application.

To note a few of the commitments the applicant has made: the applicant appears to have designed a well-credentialed safety and security plan (including a commitment to avoid queueing in the plaza), is 100% owned by Somerville residents, will offer all employees a $15/hr minimum wage, will work with neighboring businesses to cross-promote existing businesses, possibly via a discount program, will offer educational classes for the community in a second-story meeting space that will also be made available to community groups when possible, and has demonstrated an ability to work constructively and respectfully with neighboring businesses and residents. I would encourage the applicant to consider ways to support small and local businesses in their supply chain and local vendors, as well, as this may be one of the best ways for new, small local businesses to enter this market."

KHALSA DESIGN INCORPORATED
Architecture & Urban Planning
17 Ivaloo Street, Suite 400, Somerville, MA 02143
p.617-591-8682 / f. 617-591-2086

TO: City of Somerville
(617)-625-6600

DATE: 09-23-2020

FROM: Will Chalfant
Khalsa Design, Inc.
17 Ivaloo Street
Somerville, MA 02143
(617)-591-8682

RE: 70-72 Union Square

To Whom it may concern:
The proposed project located at 70-72 Union Square was originally presented to the Urban Design Committee on July 6th, 2020. At this meeting, the original proposal along with three façade options were presented to the board for comment.

The original design received the following comments:

-Proposed building is trying too hard to fit into in with its historical abutters
-Building reads flat, lacks texture
-Proposed 3rd floor terrace seems out of place and unnecessary.
-Proposed building has too many cornices breaking up the façade
-Color palette had too many materials. Needed to simplify.

These comments were taken to heart and the revised building reflected these changes.

-The revised proposal is still a brick building, however the detailing and proportions along with some of the glazing elements portray this building as modern-day building. The buildings materials still complement its historic neighbors
-The revised design has extensive brick detailing added to it by using soldier course window headers, brick cornice and Flemish bond undulation that adds texture and visual intertest to the project.

CC: File

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-The proposed terrace was removed, and the building expanded to read as a true 3-story building. By doing this the massing of the proposed is more substantial in size and continues and adds to the existing street-wall along Union Square.
-The revised building has only two cornices now. The first separates the ground level commercial space from the office and education space above. This larger precast cornice creates a clear visual break between ground level activity and spaces on the upper floors. The top of the building has been treated with a different color brick cornice to cap the structure and continue with the masonry aesthetic.
-Previous versions contained cast stone along with brick and precast heads and sills along with PVC trellis detailing. The revised has narrowed this palette to brick used in varying manners to create texture as well as precast elements which have been discussed above. This simplification of the materials has made the project better as a whole by highlighting its details opposed to distracting with varying color and material choices.

The comments and directives issued by the UDC proved to be tremendously helpful in elevating this project from its initial design. The overall project is better for it and now has the opportunity to be a fixture in Union Square along with it's historical neighbors.

Will Chalfant
Khalsa Design Inc.

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NEIGHBORHOOD MEETING REPORT

Property:	71-72 Union Square
Applicant:	Laxmi N. Pradhan, Trustee of Everest Realty Trust
Agent:	Adam Dash, Esq.
Zoning District:	CC4/MPD Overlay/USQ Sub-area/Pedestrian Street District

Neighborhood Meeting Date: September 9, 2020

This is the required Neighborhood Meeting Report regarding the above-referenced DRA.

The September 9, 2020 neighborhood meeting was the third neighborhood meeting on this project. It was held via remote participation at 7:30pm and was recorded by Councilor Ben Ewen-Campen.

Attendees:

Ben Ewen-Campen, Ward 3 Councilor
Charlotte Leis, City Planner
Binoj Pradhan from the Applicant
Adam Dash, Esq., Attorney for the Applicant
Will Chalfant, Architect for the Applicant
Greg Santos from Union Leaf
Peter Grillo, Product Expert for Union Leaf
Jesse Waites
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Barak Kramer
Jon Wooding
Ben Weber
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Andrew Cheever
Stuart Dash
Hang Ngo
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Councilor Ewen-Campen explained the process, then Attorney Dash went through the project details. Will Chalfant then showed the plans and explained them.

Public Comment can be summarized as follows:

-there were questions about the educational space on the second floor, which were answered by Mr. Santos from Union Leaf, the proposed cannabis retailer. The space will be used for cannabis education and will have displays regarding cannabis history. When not being used for that, it could be used as community meeting space.

-a resident liked the upper story terrace on the front from the prior design. Mr. Chalfant explained that the Urban Design Commission did not think that the terrace fit, and that it was too narrow. The resident understood removing the terrace if it was that narrow.

-a resident expressed support for the project as a community benefit and liked the mural idea.

-a resident asked about the location and screening of the mechanicals. Mr. Chalfant explained that they would be screened and on the roof. The exact equipment had not been decided yet, and the state Cannabis Control Commission has odor mitigation requirements to meet. The resident would like to see the screening information.

-a resident asked why there was an elevator to the basement. Mr. Chalfant explained that it was required by code.

-a resident asked about the completion date. Attorney Dash and Ms. Leis explained about the zoning approval timeline, and Mr. Chalfant explained that construction would take about 12 months.

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-a resident stated that the proposed use would bring in foot traffic which would help other businesses. Mr. Santos explained that its customers will patronize other businesses near the store.

The meeting was adjourned at 8:20pm.

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The meeting was adjourned at 8:20pm.

INTRODUCTION

This document outlines Development Review Application requirements in relation to the long-term environmental sustainability and climate resilience of buildings within Somerville. Development proposals that require Site Plan Approval by the Somerville Zoning Ordinance must include a completed Sustainable & Resilient Buildings Questionnaire (Questionnaire) with the required Development Review Application. A Development Review Application is considered incomplete unless a completed questionnaire is submitted with the application. It is strongly recommended that the development team meets with staff from the Office of Sustainability and Environment prior to submitting the Development Review Application.

The purpose of this Questionnaire is to minimize the adverse environmental impacts in the design, construction, and occupancy of buildings in Somerville and to ensure that the impacts of future climate conditions are carefully evaluated.

Please review the following documents before completing the Questionnaire:

- **Somerville Climate Change Vulnerability Assessment**
- **Carbon Neutrality Pathway Assessment**
- **Somerville Climate Forward**

PROCEDURE:

A completed Sustainable & Resilient Buildings Questionnaire must be submitted with a Development Review Application for all development proposals that require Site Plan Approval. New construction or alterations to existing structures of 25,000 square feet or more must also submit an updated Questionnaire prior to the issuance of the first Building Permit and prior to the issuance of the first Certificate of Occupancy to identify any design changes made subsequent to Site Plan Approval or additional information determined as the development process unfolds.

BACKGROUND: CARBON NEUTRALITY

Understanding the global imperative to reduce greenhouse gas emissions in order to prevent extreme changes to the climate, Mayor Joseph A. Curtatone set a goal for Somerville to become carbon neutral by the year 2050. Carbon neutrality is defined as the net-zero release of carbon dioxide and other greenhouse gases (GHG) within Somerville's municipal boundary. Reducing greenhouse gas emissions is critical to avoiding the worst impacts of climate change and to protecting the health, safety, and welfare of current and future generations. In 2017, the Somerville Board of Aldermen passed a resolution reaffirming the city's carbon neutrality goal. And In 2018, Somerville released its first community-wide climate action plan, Somerville Climate Forward.

To achieve carbon neutrality by 2050 and to minimize adverse environmental impacts, Somerville will need to drastically reduce greenhouse gas emissions from electricity, buildings, transportation, and waste disposal. To meet these goals, all buildings within the city will need to pursue net zero emissions. New development should

be designed to maximize envelope performance and energy efficiency, produce or procure renewable energy, and phase out fossil fuel use through electrification of building systems. The City of Somerville recognizes that as technology advances, incorporating design elements to mitigate carbon emissions and increase resilience may become more feasible. Applicants are asked to devise strategies that permit building systems to adapt and evolve over time to further reduce GHG emissions and to avoid path dependency that perpetuates reliance on fossil fuels.

BACKGROUND: CLIMATE CHANGE VULNERABILITY

Despite efforts to minimize greenhouse gas emissions, climate change is already impacting Somerville and changes to the climate will continue to intensify. The City of Somerville's Climate Change Vulnerability Assessment analyses vulnerabilities associated with Somerville's key climate stressors: increased precipitation, sea level rise and storm surge, and higher temperatures. The analysis recommends that new development consider these climate impacts and take appropriate measures to address the projected climatic conditions described in the assessment.

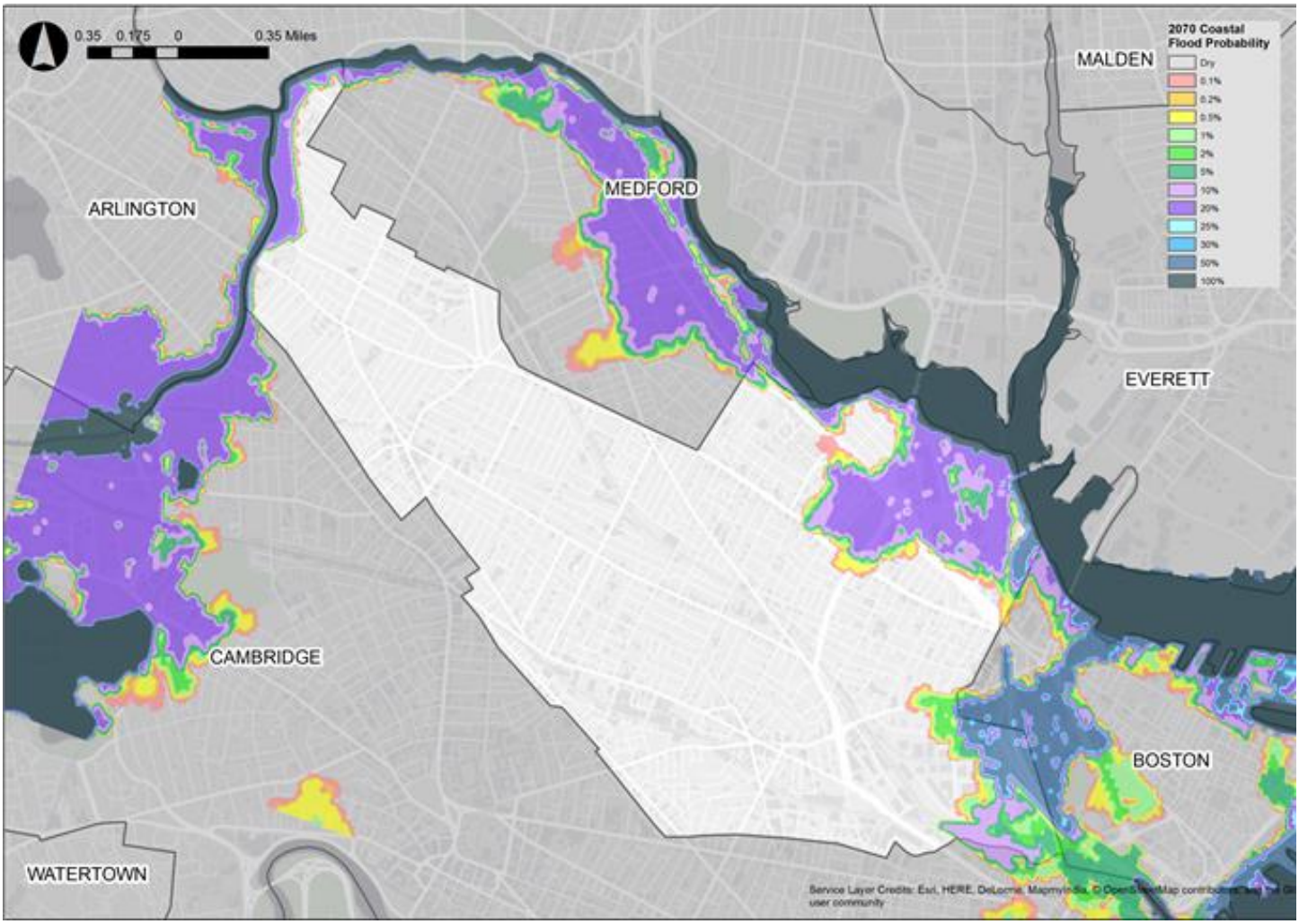
Several areas of Somerville are already prone to flooding from intense precipitation. With climate change, precipitation events will become more intense—meaning that a greater volume of rain will fall in a shorter period of time. Somerville is projected to experience more than a 30% increase in rainfall during a 100-year 24-hour event. This increase in precipitation will increase the risk of flooding in areas where the drainage system does not have sufficient capacity.

In addition to flooding from precipitation, sea level rise and storm surge are already potential concerns for areas of East Somerville and by 2035-2040 the Amelia Earhart Dam could be regularly flanked by storms, resulting in flooding for areas of Assembly Square, Ten Hills, and Winter Hill.

As the climate continues to change, average seasonal temperatures are also expected to increase and the number of days above 90 degrees Fahrenheit (historically about 10 a year) could rise to 40 days by 2030, a third of the summer, and 90 days by 2070, nearly the entire summer. In 2018 there were 23 days over 90 degrees.
As temperatures increase, Somerville will become more susceptible to the urban heat island effect which causes hotter temperatures due to paved surfaces and waste heat generated by energy use when compared to less developed areas. Increasing average temperatures can have wide-ranging impacts on human life, the built environment, and natural ecosystems. Rising temperatures and more intense heat waves present significant public health concerns and can contribute toward kidney, lung, and heart problems. Vulnerable populations are particularly susceptible to heat-induced illness and mortality. There will also be increasing demand for indoor cooling.

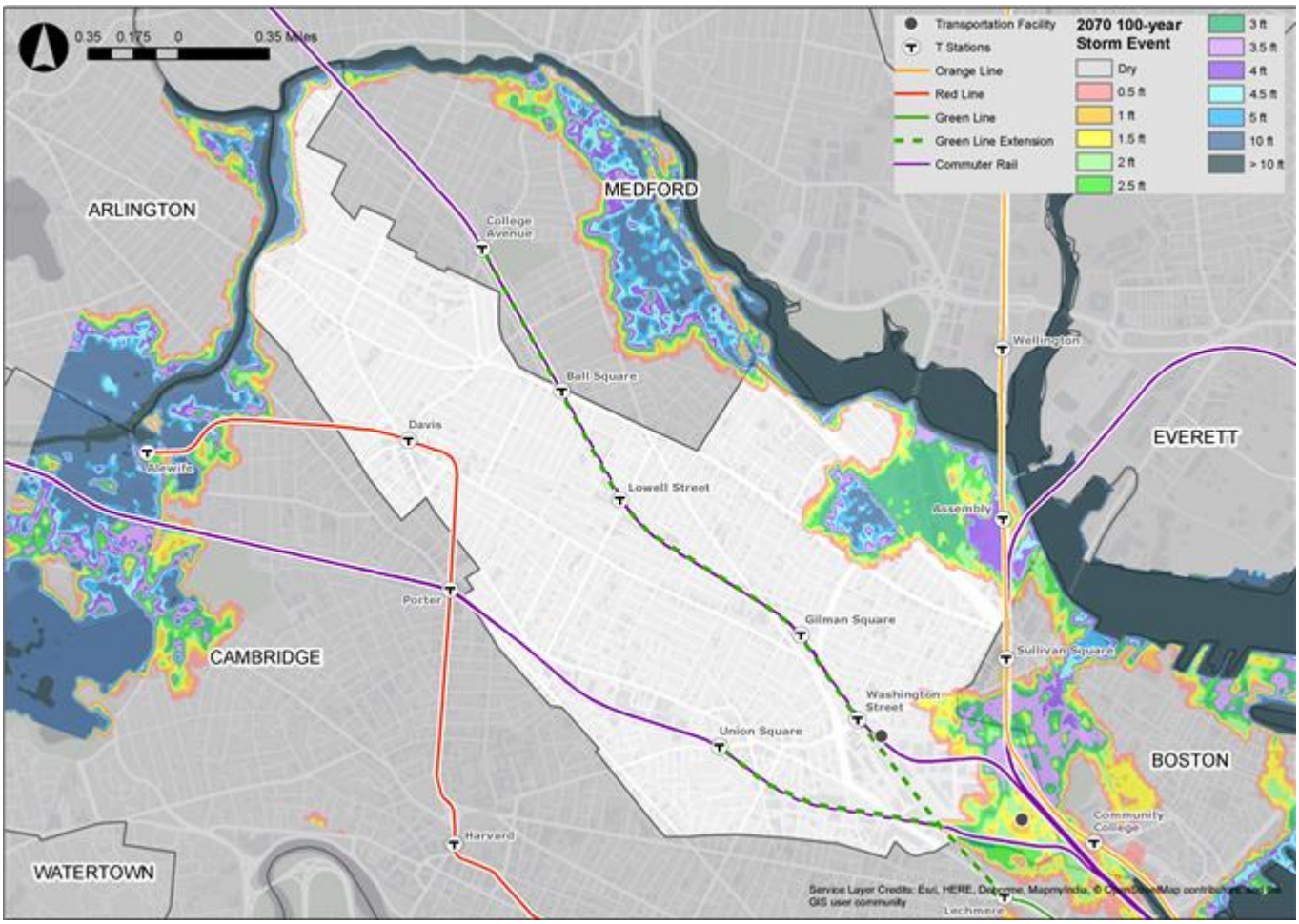
The following maps and figures provide an overview of projected climate exposure. Please review the Climate Change Vulnerability Assessment for more detailed analysis on Somerville's exposure, vulnerability, and risk to climate change. For higher resolution maps and GIS files, please contact Hannah Payne, Sustainability Coordinator, at hpayne@somervillema.gov.

2070 Coastal Flood Probability



This map shows the annual chance of flooding from coastal storm events and sea level rise in 2070. A 100% chance of flooding means that there is a nearly certain chance that the area will flood at least once in a given year, while a 50% chance means that there is an equal chance that it may or may not flood in a given year. A 1% chance of flooding corresponds with a 100-year event. A 0.1% chance corresponds with a 1000-year event. This map does not account for drainage (Somerville Climate Change Vulnerability Assessment, 2017)

2070 Coastal Flood Depth from 2070 100-year Storm Event

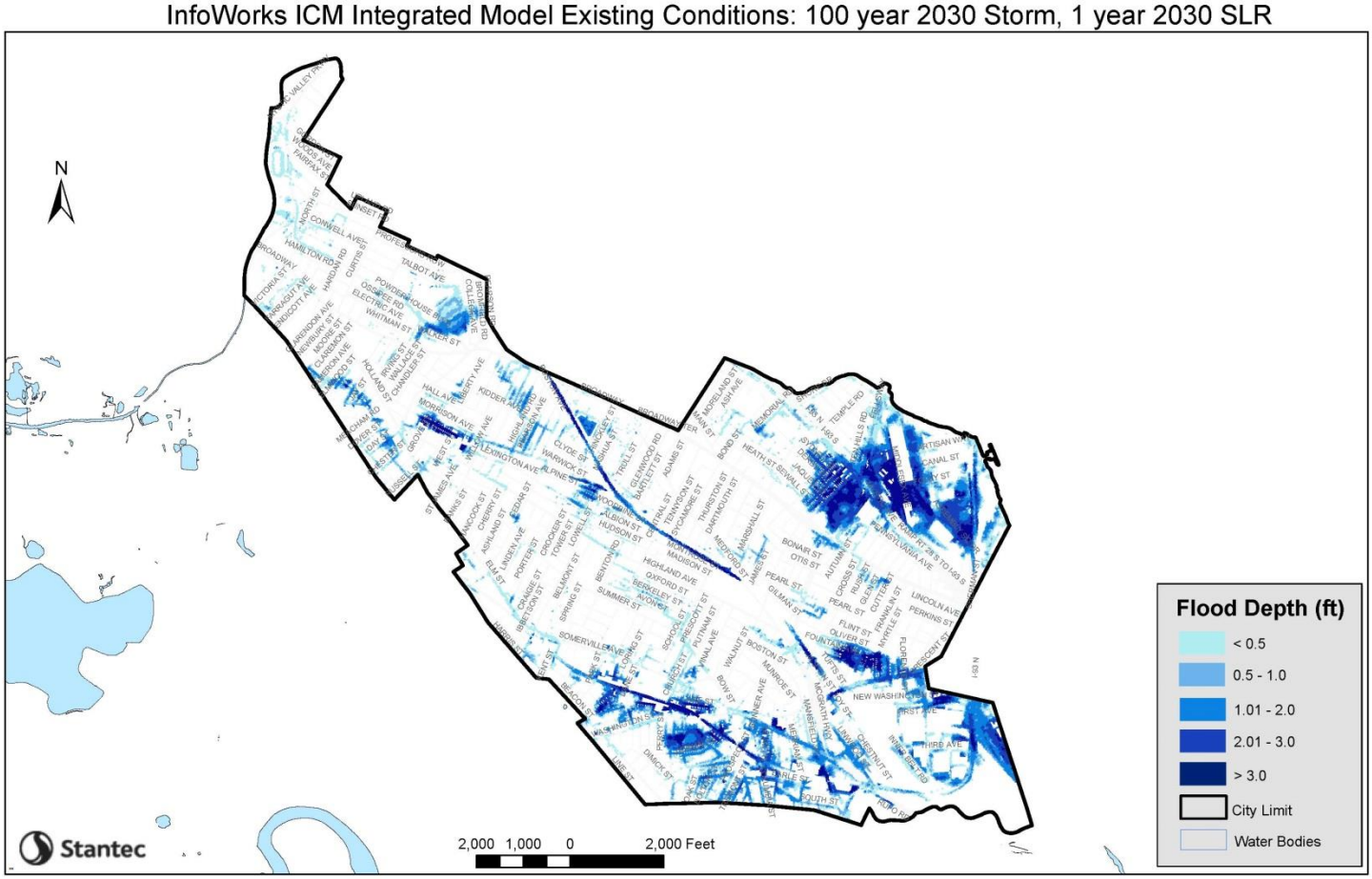


This map shows the projected flood depths of a 100-year coastal storm event in 2070 along with public transportation infrastructure assets. This map does not account for drainage (Somerville Climate Change Vulnerability Assessment, 2017)

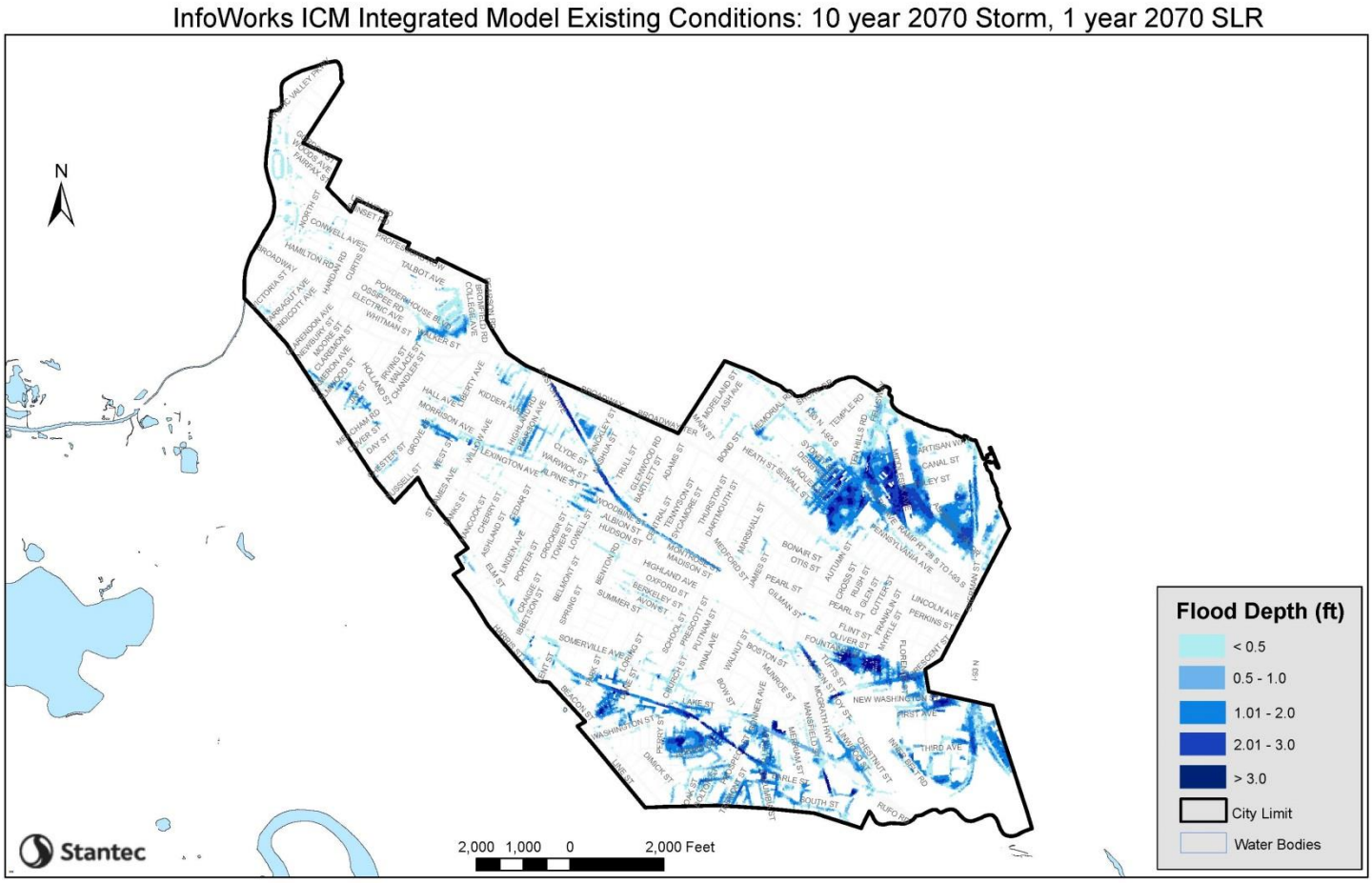
Precipitation Projections

Precipitation-based flooding is projected to increase in Somerville and is currently more of an immediate and widespread threat than sea level rise and storm surge. The intensification of both the frequency and intensity of rainfall events is likely to cause increased risk of flooding during rain events.

Storm Type	Present-day Rainfall	2030 Rainfall	2070 Rainfall
10-year (10% annual chance), 24-hour	4.9 in	5.6 in	6.4 in
100-year (1% annual chance), 24-hour	8.9 in	10.2 in	11.7 in



This map shows the impact of both precipitation-based flooding and sea level rise and storm surge. This map shows the modeled flood depths of a 100-year, 24-hour Design Storm with 1-year storm surge and sea level rise projections in 2030. Unlike the maps above, this includes modeling of the drainage system, which takes into account how water will be conveyed out of the city. The model is based on how the system is designed to function, so actual areas of flooding and depth of flooding could vary (Stantec, 2019).



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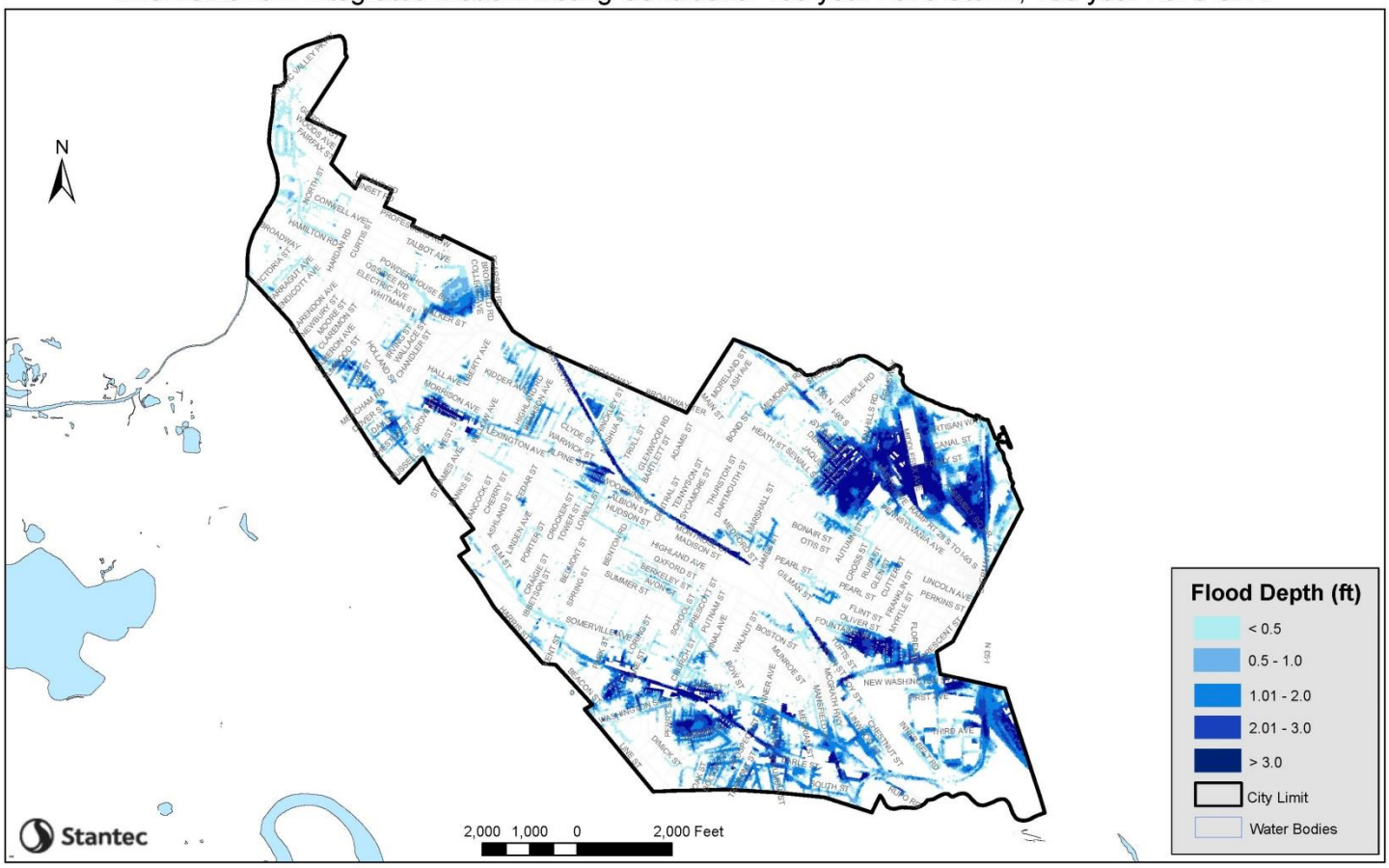
InfoWorks ICM Integrated Model Existing Conditions: 100 year 2070 Storm, 100 year 2070 SLR



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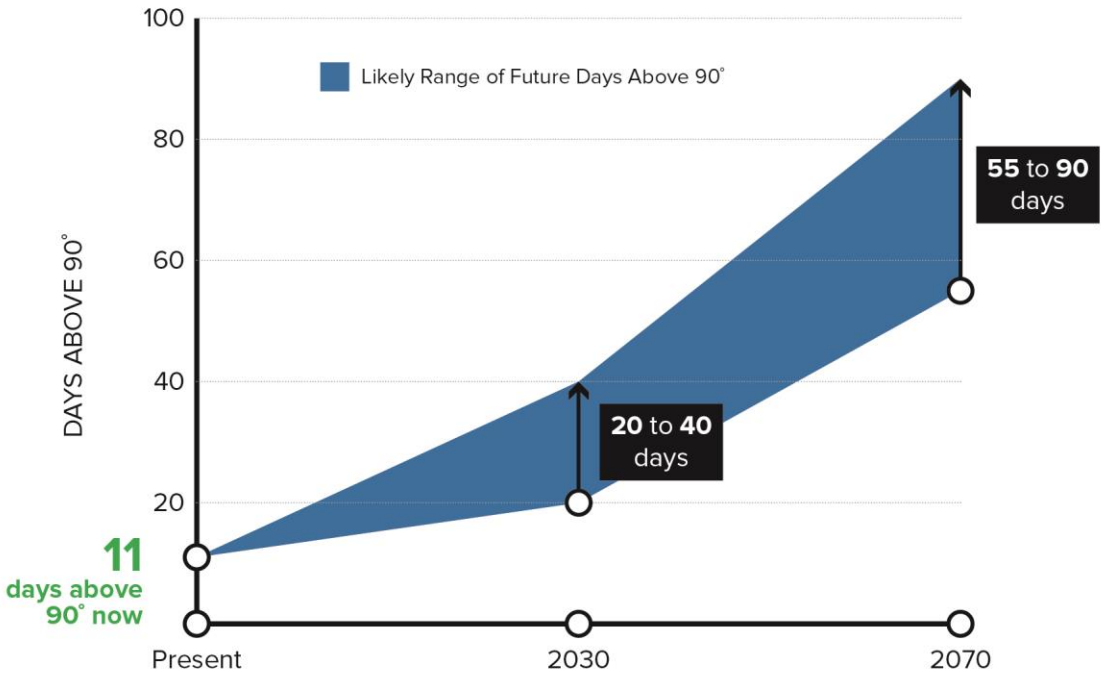
Temperature Projections



(Somerville Climate Change Vulnerability Assessment 2017)

Temperature	1971-2000 (average)	2030 (low)	2030 Avg.	2030 (high)	2070 (low)	2070 Avg.	2070 (high)
Annual	50.0º F	53.3º F		53.5º F	55.8º F		58.7º F
Summer	70.6º F	74.5º F		74.8º F	77.4º F		80.6º F
Winter	29.8º F	32.2º F		33.0º F	34.6º F		38.0º F

RESOURCES:

For information on net-zero and resilient building and site design, please review the following resources:

- **Passive House Principles**
- **Architecture 2030 Palette (Net-zero design tools)**
- **Building Resilience in Boston**
- **Enhancing Resilience in Boston**
- **A Better City's Resiliency Toolkit**
- **Ready to Respond: Strategies for Multifamily Building Resilience**

For additional information visit www.somervillema.gov/sustainaville

SUSTAINABLE & RESILIENT BUILDINGS QUESTIONNAIRE

Section 1: Proposal Information

Proposal Name	Union Leaf
Address	70-72 Union Square Somerville, MA 02143
Developer	Laxmi N. Pradhan
Business Address	Everest Realty Trust
Designated Contact	Binoj Pradhan
Telephone Number	617-501-7309
Contact's Email Address	Binoj.pradhan@gmail.com
Date Submitted	9.22.20
Filing Type (Development review application, Building Permit, or CoA)	Development Review
Is this a revised Questionnaire?	No
Is MEPA Approval Required?	Yes/**No**; Why?

Section 2: Building & Site Details

2.1 Building Information

Building Uses	Business / Education space / Office
Gross Floor Area	6,019 sf
Expected Life of Building	100 years
Expected Life of Building Systems: HVAC, electrical, boilers, plumbing, telecom, lighting, energy management.	50 Years
Type of Heating System(s)	At this stage, a mechanical engineer has not been brought on board. A preliminary analysis suggests a Variable Refrigerant flow with a heat recovery system will be used.
Type of Cooling System(s)	At this stage, a mechanical engineer has not been brought on board. A preliminary analysis suggests a Variable Refrigerant flow with a heat recovery system will be used.

2.2. Green Building

	Have not contracted one yet.
Green Building Professional(s): Name(s) and contact information	
Professional Credentials: Green Building Program Certification(s)	

Building LEED Rating	Certifiable Silver
Building LEED Point Score	
Will you pursue LEED certification through the USGBC?	Yes
Are any other green building certifications being pursued? (Passive House, Enterprise Green Communities, etc.). Please describe.	No

2.3. Electric Vehicle Parking

The number of electric vehicles (EVs) in Somerville is expected to increase significantly over the next decade with more electric vehicles coming to market than ever before. Conservative estimates based on historical trends alone suggest 20% of personal vehicles in Somerville will be electric by 2040. Installing capacity for EV supply equipment (EVSE) has been shown to be more feasible and cost effective during construction than when retrofitting parking areas to support the installation of EVSE in the future[1]. Providing EVSE can increase the property value, become a future revenue source, and provide an amenity that more tenants and commuters will be looking for. It is recommended that parking facilities be designed to allow for the most flexibility to adapt to future needs of electric vehicles and changing mobility needs. The City of Somerville recommends 25% of spaces have installed charging access and up to 100% of spaces be "EV Ready" (everything but the station installed). Eversource currently has a program to pay the associated infrastructure costs of EV charging, including infrastructure needed to be "EV ready." Please consult with Eversource to determine if any installation costs could be covered through their Make Ready Program.

Total # of Parking Spaces	Project has no parking spaces
EVSE Plugs (number and voltage/ level of plugs)	Not applicable
EV Ready Spaces (everything but station is installed)	Not applicable
Please share any other information on your EV strategy. Have you spoken with Eversource? Are you talking with EVSE providers? Have you considered EVSE needs in	Not applicable

[1] http://evchargingpros.com/wp-content/uploads/2017/04/City-of-SF-PEV-Infrastructure-Cost-Effectiveness-Report-2016.pdf; https://www.richmond.ca/__shared/assets/Residential_EV_Charging_Local_Government_Guide51732.pdf

conjunction with your parking and mobility management plans?	

2.4 Key Building Efficiency Metrics
The following should be provided for each building type (office, retail, multifamily, hotel, restaurant, etc.).

Vertical Envelope Performance

Vertical Envelope	ASHRAE Reference Building			Proposed Building		
	Percent of Vertical Area	**R value** *(see note 1)*	**U value** *(see note 2)*	**Percent of Vertical Area**	**R value** *(see note 1)*	**U value** *(note 2)*
Framed, insulated Wall	%	R+Rc.i.	U-value	52%	13R+5Rc.i	U-value
Opaque glass, curtain wall, shadowbox, spandrel	NA – ASHRAE reference building has no spandrel			0%	R+Rc.i	R+Rc.i.
Vision glass	%	R-value	U-value *(note 3)*	48%	R-value	U-value *(note 3)*
	100%		***Aggregate U*** *(note 4)*	***100%***		***Aggregate U*** *(note 4)*
			Aggregate R			***Aggregate R***

Notes:

1. Show in format of R+R c.i. where first R is amount of discontinuous insulation and second R is amount of continuous insulation.

2. U values shall be based on indicated R+R c.i. and shall conform to Appendix A of ASHRAE 90.1 2013.

3. U value includes frame, per NRFC standard methods.

4. Aggregate U is calculated as: $(U_1\%_1 + U_2\%_2 + U_3\%_3)$ where U is the respective thermal transmittance values and $\%_1$ is the percent area of framed insulated wall; $\%_2$ is the percent area of opaque glass, curtain, or shadowbox; and $\%_3$ is the percent area of vision glass. Only areas adjacent to conditioned space are counted, areas adjacent to unconditioned spaces (e.g. parking garages, mechanical penthouses) are not counted. Aggregate R is the inverse of aggregate U. For percent areas for ASHRAE reference building, see Table G3.1.1-1 in ASHRAE 90.1 2013.

Other Performance Metrics

	ASHRAE Reference Building	Proposed Building
Air Infiltration (ACH 50)		
Aggregate Vertical Envelope R		R-19
Roof R		R-49
Lowest level conditioned floor above unconditioned space (if any) R		N/A
Cooling End Use (kBtu/sf-yr)		
Heating End Use (kBtu/sf-yr)		
Peak Heating (kBtu/hr-sf)		
Peak Cooling (kBtu/hr-sf)		
Site EUI (kBtu/hr-sf)		

Section 3. Planning for Net Zero Emissions and Energy Resilience

3.1. How is the building currently designed to reduce energy usage? Please describe the key design features of the building including:

A) Building envelope performance (including roof, foundation, walls, and window assemblies)
B) How has the design team integrated energy performance into the building and site design and engineering (orientation, massing, mechanical systems, envelope, etc.)?
C) Efficiency of heating and cooling systems. Will these systems be electric? Provide reasoning for selection of heating and cooling systems.

The building will utilize a high-performance envelope and high efficiency, electric heating & cooling systems. A portion of the roof will be solar ready. The remainder of the roof will be a green roof comprised of a sedum or similar plant material. This will cut down on heating and cooling costs.

3.2 Will the building be a net zero carbon building? 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. 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. Changes could include, but are not limited to, 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.

The building will not be zero carbon.
As previously stated, the building will have a high performance envelope and will utilize high-efficiency heating & cooling systems along with the implementation of a green roof to offset operating costs.

3.3 Describe any and all incentives, rebates, grants provided by utilities, government organizations, and other organizations being pursued to maximize building efficiency and to reduce emissions. Description must include any incentives that were considered but are not being pursued, including reasoning for each decision.

Project will utilize any available MassSave opportunities. Energy Star appliances and fixtures will be used as required. High efficiency windows will be installed to help with solar heat gain.

3.4 Evaluate feasibility of on-site renewable generation. Please describe your analysis and findings. Analysis should consider incentives available. Will any renewable energy generation be incorporated into the project? If so, please describe (system type and capacity). If no, could it be added in the future? And will any off-site renewable energy be purchased?

Due to site constraints and proximity of adjacent structures the lot is limited in its options for this. We feel that the combination of solar ready roof along with a green roof are best efforts in this instance.

3.5. Are any on-site energy storage systems planned? Please describe.

At this point the project team has not planned for energy storage systems. A portion of the roof has been allocated to be solar ready. More information will be available when a Mechanical Engineer is brought on board during the permitting process.

3.6 Does the electric utility's infrastructure have enough capacity to support the addition of your building's energy load? Please provide confirmation from utility.

More information will be available when a Mechanical Engineer is brought on board during the permitting process. The existing building was formerly a restaurant and liquor store. The plaza in front of this building has recently had extensive utility work done. The expectation is that this will be more than adequate.

3.7 Will the building's roof include any sustainability features? These may include, but are not limited to, high albedo roof materials, solar panels, or vegetation. Please describe what features could be added in the future (i.e. roof will be designed to support solar or green roof installation of X size).

As previously stated, the intention is to have a green roof along with an area for opportunity of a future solar array installation.

Section 4: Climate Change Risk and Vulnerability

4.1 Climate Vulnerability Exposure
(check all that apply)

- ☐ Sea Level Rise & Storm Surge
- ☐ Precipitation Induced Flooding
- ☐ Heat
- ☐ Other(s):

4.2 How is your site vulnerable to projected climate change impacts?

This project is vulnerable to 0.5 -1.0 ft of flood waters per the 10 year & 100 year 24-hour events. Union Square has a low outdoor heat exposure

The next two sections ask specific questions about how the project is designed to manage climate-related risks from heat, coastal and inland flooding.

Section 5: Managing Heat Risks

5.1 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 will incorporate thermal massive materials as required by the energy code. The spaces in the building, being used primarily for commercial and office use will be serviced by mechanical cooling systems. The building is flanked on either side by abutting buildings. The upper floors of the building have windows on both the front and rear to promote cross ventilation. The green roof will also aid in reducing heat on the upper floor.

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

While a mechanical engineer has not been retained to outline the specific systems at this point, this project is expected to use a high efficiency VRF system.

5.3 List any indoor spaces without cooling and their uses.

NA

5.4 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. Strategies could include, but are not be 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
- Additional landscaped areas

Green roof as well as entrance canopy for shade protection.

Section 6: Managing Flood Risks

6.1 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 the updated stormwater flooding maps provided in the Background section of this Questionnaire. Additional maps and data are available by request (email hpayne@somervillema.gov)

This project is vulnerable to 0.5 – 1.0 ft of flood waters per the 10 Year & 100 Year 24-hour Events

If you answered YES to the previous question, please complete the remainder of Section 6. Otherwise, you have completed the Questionnaire. Thank you.

6.2 Flooding Design Considerations

Proposed Site Elevation - Low	10.86 (ft)	Proposed Site Elevation - High	11.05 (ft)
Lowest elevation of life-safety systems	3.27 (ft)	Proposed First Floor Elevation	11.27 (ft)
Nearest flood elevation for the 2070 10-year storm		Nearest flood elevation for the 2070 100-year storm	

6.3 What are the first floor uses of the building? Are there any below ground stories of the building? If so, what uses are located below ground?

Ground floor of the building will be a commercial space. The basement will strictly be used for storage and employee break space.

6.4 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? What measures will protect building systems during a flood or severe storm? These might include, but may not be limited to, the following:

- Elevation of utilities and mechanical systems
- Water tight utility conduits
- Waste water back flow prevention
- Storm water back flow prevention
- Systems located above the ground floor
- Securing objects at risk of becoming dislodged

The basement mechanical space is subject to flooring. All mechanicals will be elevated as required to circumvent their failure in the event of a flood.

6.5. 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 10-year storm.** Please refer to both the 2070 coastal flood probability map and the 2070 10-year storm and 1-year sea level rise scenario (pages 3 and 6). 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)

This building will strictly be utilized for commercial and office space. All foundation work will utilize concrete additives to avoid water infiltration. Other exterior waterproofing methods will be utilized to ensure a dry basement space.

6.6 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. **How will your site and building be impacted by the 2070 100-year, 24-hour storm and how will your site and building be designed to protect against those impacts?** 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 (pages 4 and 7). Summarize anticipated pre- and post-event policies, strategies, and actions necessary to facilitate post-flood recovery.

This building will not be used for residential purposes.

6.7 Will hazardous or toxic material be stored on site? Where will it be stored? How will you protect hazardous or toxic material from flooding?

It is not intended to store any hazardous or toxic materials on site.

6.8 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?

The proposed building has no parking associated with it. It is adjacent to a public parking lot and pedestrian plaza. Access with a vehicle will not be an issue.