

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.

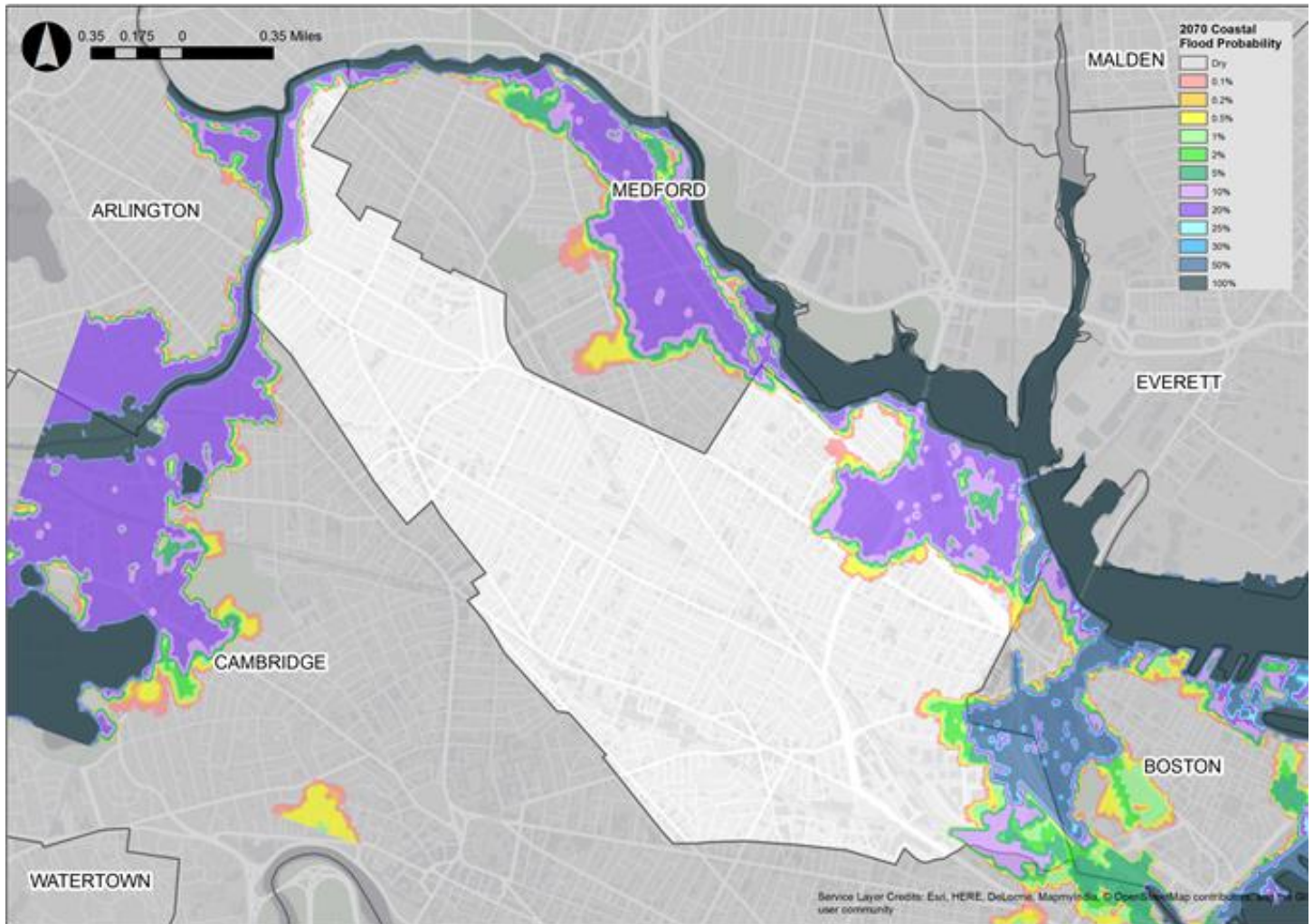
Several areas of Somerville are already prone to flooding from intense precipitation. With climate change, precipitation events will become more intense—meaning that a greater volume of rain will fall in a shorter period of time. Somerville is projected to experience more than a 30% increase in rainfall 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.

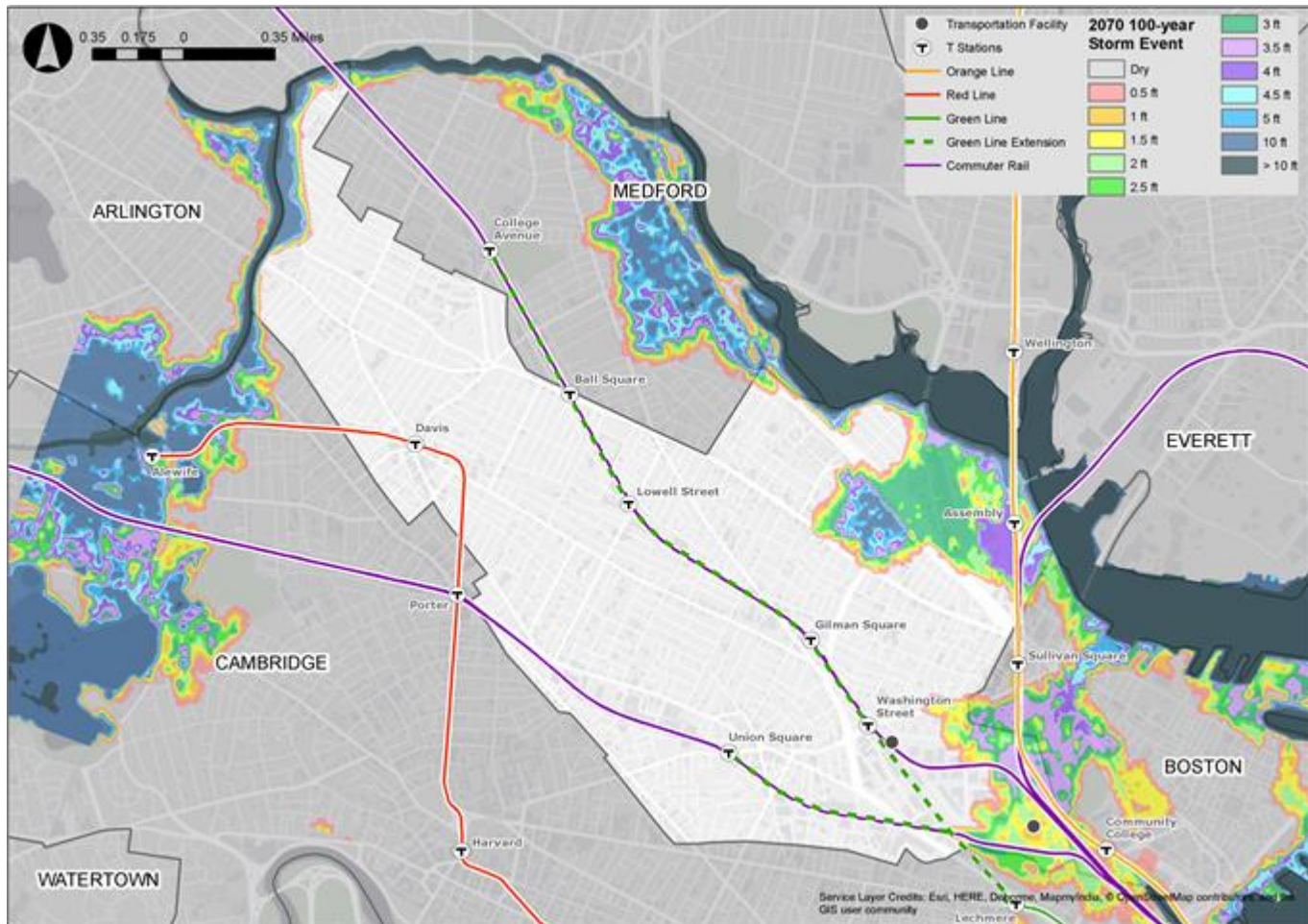
The following maps and figures provide an overview of projected climate exposure. Please review [the Climate Change Vulnerability Assessment](#) for more detailed analysis on Somerville's exposure, vulnerability, and risk to climate change. For higher resolution maps and GIS files, please contact Hannah 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



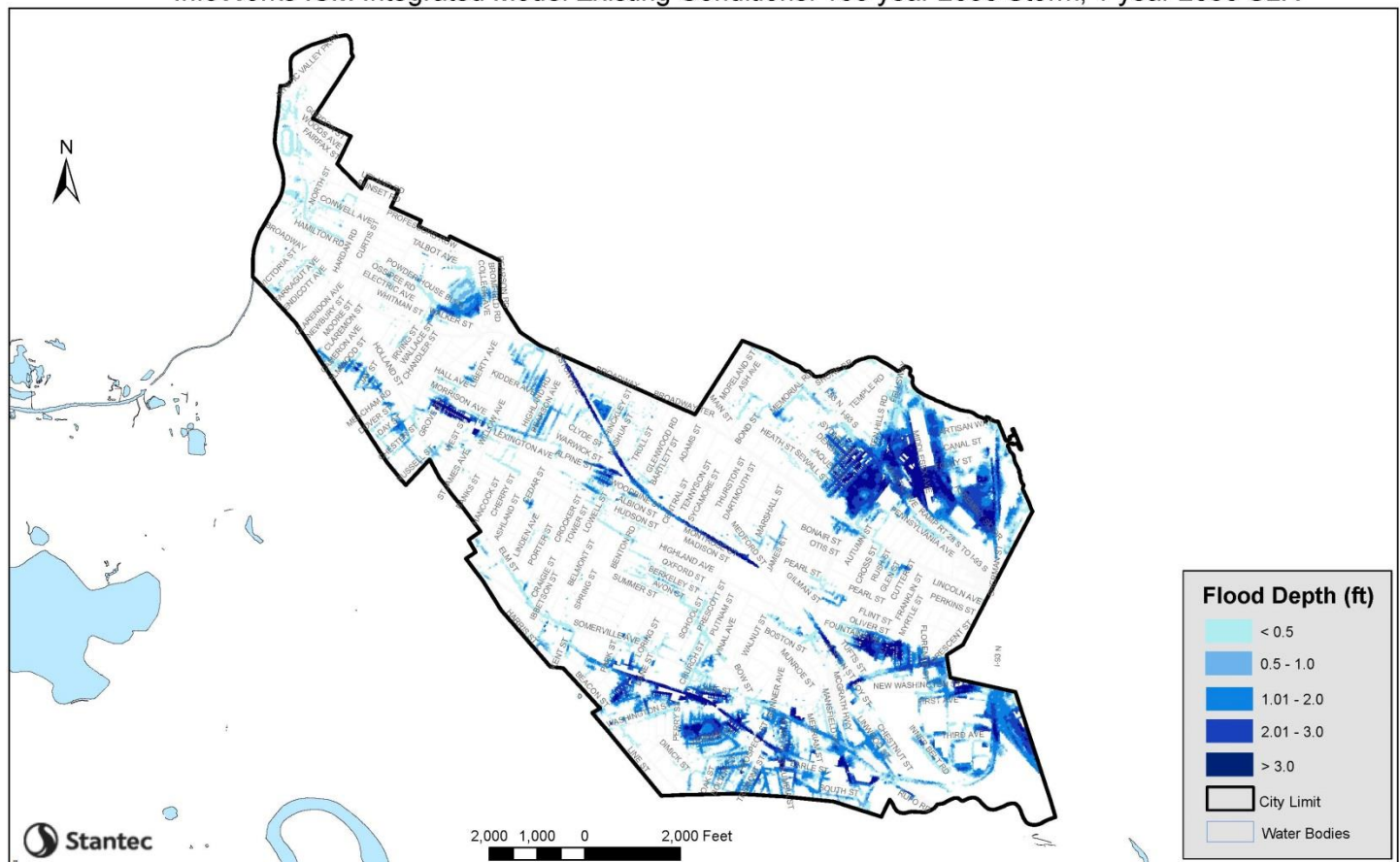
This map shows the projected flood depths of a 100-year coastal storm event in 2070 along with public transportation infrastructure assets. This map does not account for drainage (Somerville Climate Change Vulnerability Assessment, 2017)

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.

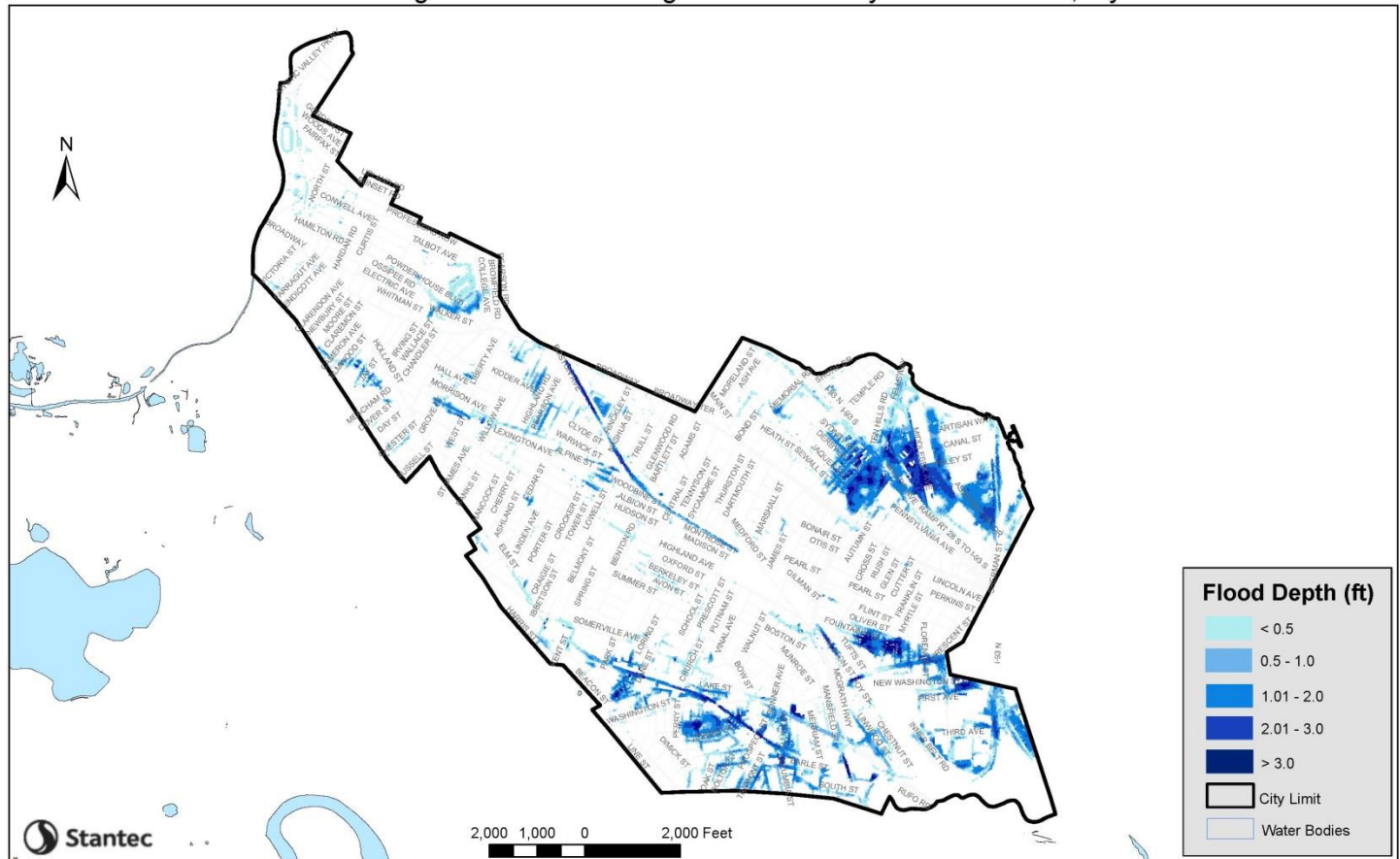
Storm Type	Present-day Rainfall	2030 Rainfall	2070 Rainfall
10-year (10% annual chance), 24-hour	4.9 in	5.6 in	6.4 in
100-year (1% annual chance), 24-hour	8.9 in	10.2 in	11.7 in

InfoWorks ICM Integrated Model Existing Conditions: 100 year 2030 Storm, 1 year 2030 SLR



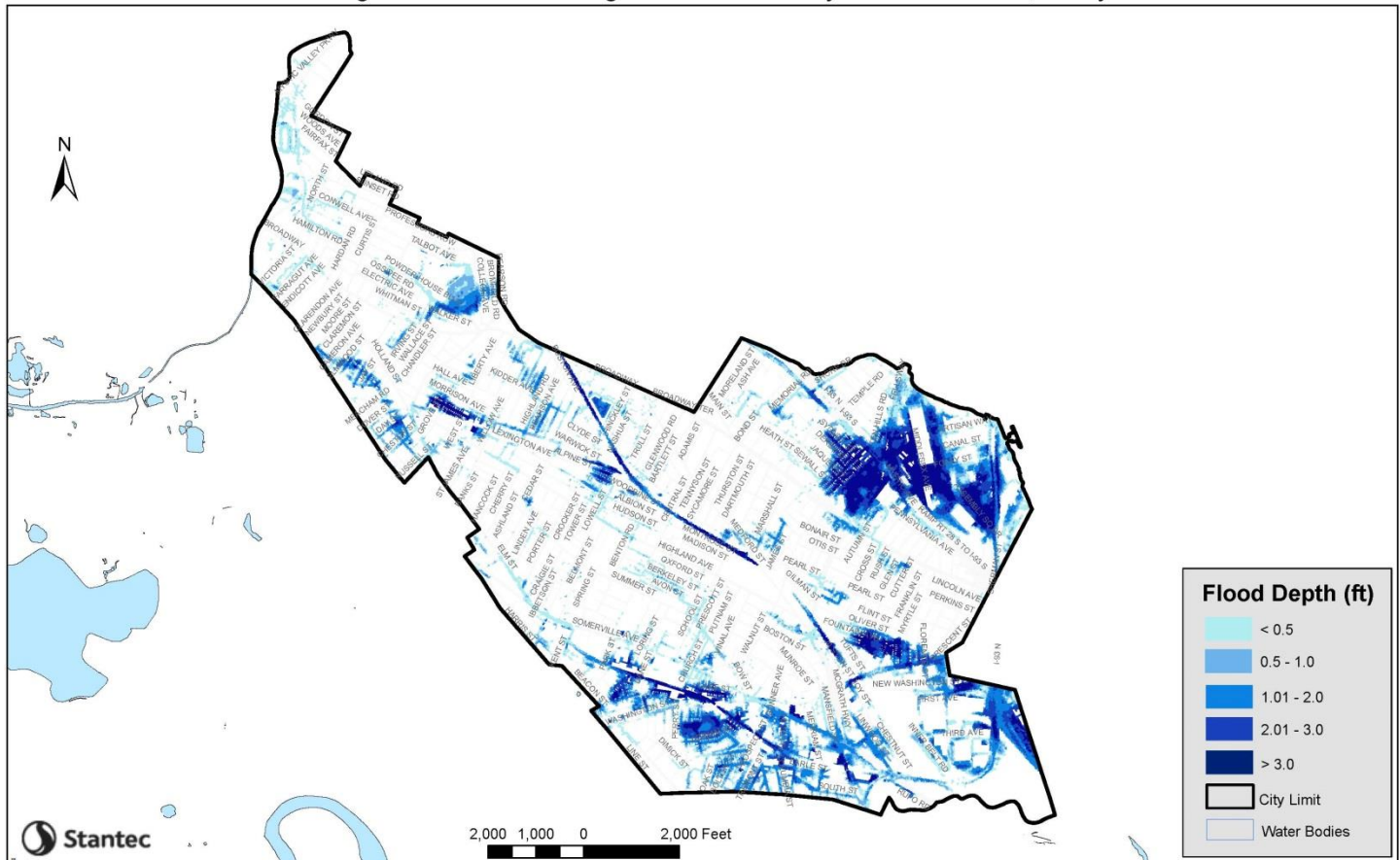
This map shows the impact of both precipitation-based flooding and sea level rise and storm surge. This map shows the modeled flood depths of a 100-year, 24-hour Design Storm with 1-year storm surge and sea level rise projections in 2030. Unlike the maps above, this includes modeling of the drainage 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).

InfoWorks ICM Integrated Model Existing Conditions: 10 year 2070 Storm, 1 year 2070 SLR



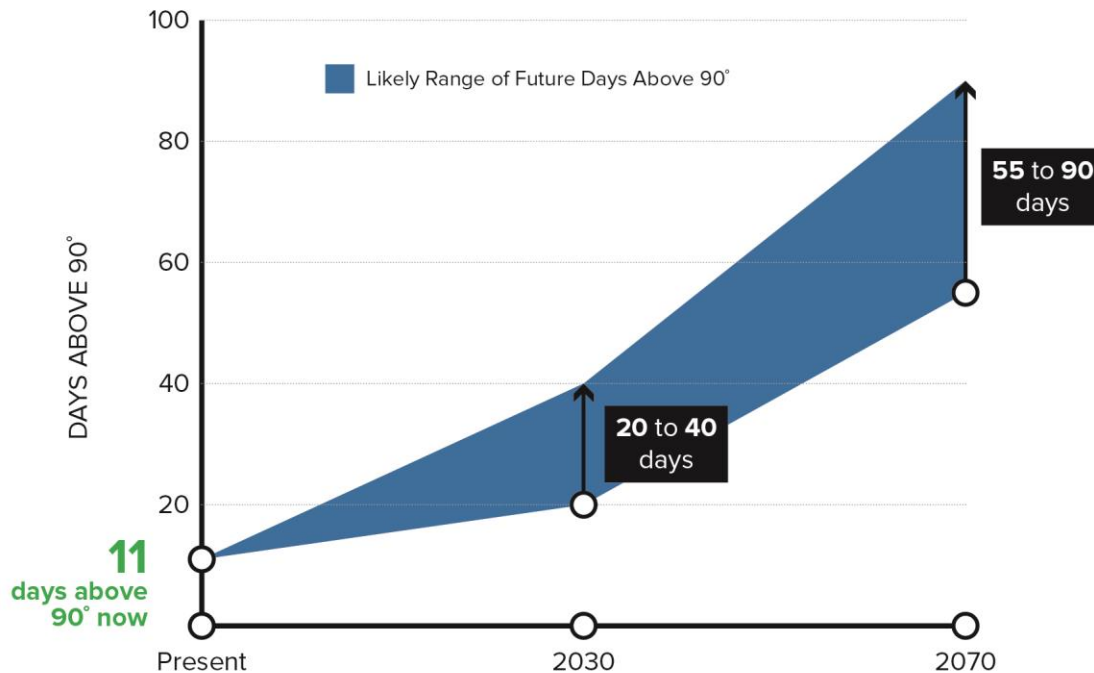
This map shows the impact of both precipitation-based flooding and sea level rise and storm surge. This map shows the modeled flood depths of the 10-year, 24-hour Design Storm with 1-year storm surge and sea level rise projections in 2070. This map includes modeling of the drainage system, which takes 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).

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



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 2070 100-year, 24-hour Design Storm with 100-year storm surge and sea level rise projections in 2070. This map 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).

Temperature Projections



(Somerville Climate Change Vulnerability Assessment 2017)

Temperature	1971-2000 (average)	(low)	2030 Avg.	(high)	(low)	2070 Avg.	(high)
Annual	50.0° F	53.3° F	53.5° F	55.8° F	58.7° F		
Summer	70.6° F	74.5° F	74.8° F	77.4° F	80.6° F		
Winter	29.8° F	32.2° F	33.0° F	34.6° F	38.0° 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	74 Middlesex
Address	74 Middlesex Avenue Somerville, MA 02145
Developer	74M Property Owning, LLC
Business Address	One Federal Street, Suite 1804 Boston, MA 02110
Designated Contact	Ryan Souls
Telephone Number	857-254-1329
Contact's Email Address	Ryan.souls@greystar.com
Date Submitted	July 8, 2021
Filing Type (Development review application, Building Permit, or CoA)	Development Review Application
Is this a revised Questionnaire?	No. This is the first formal submission associated with the Development Review Application requesting Site Plan Approval.
Is MEPA Approval Required?	No; MEPA Review is not required.

Section 2: Building & Site Details

2.1 Building Information

Building Uses	Office & Laboratory, retail, assembly, below-grade parking
Gross Floor Area	494,000 square feet of GFA (excluding mechanical penthouse and below-grade parking)
Expected Life of Building	60+ Years
Expected Life of Building Systems: HVAC, electrical, boilers, plumbing, telecom, lighting, energy management.	15-30 years
Type of Heating System(s)	Air-source heat pumps (ASHPs) with supplemental condensing boilers
Type of Cooling System(s)	Air-source heat pumps (ASHPs) with supplemental centrifugal chillers

2.2. Green Building

Green Building Professional(s): Name(s) and contact information	Atelier Ten Contact: Jennifer Chalos 212-254-2500 x228 Jennifer.chalos@atelierten.com
Professional Credentials: Green Building Program Certification(s)	LEED AP BD+C

Building LEED Rating	LEEDv4 CS Platinum
Building LEED Point Score	84 (points indicated as high probability)
Will you pursue LEED certification through the USGBC?	TBD
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 future¹. 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	350 total motor vehicle parking spaces (including 313 accessory motor vehicle parking spaces with up to an additional 37 aisle parking spaces available for valet parking operations)
EVSE Plugs (number and voltage/level of plugs)	EV charging stations to be provided for 5% of parking spaces, which results in 18 EVSE stations based on the current design. (Level 2 charging capacity: 208 V)
EV Ready Spaces (everything but station is installed)	The number of EV ready spaces the project can accommodate is currently being evaluated and will not be known until the power load is confirmed with Eversource.

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

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 conjunction with your parking and mobility management plans?

The project team is targeting at least 5% of spaces to have installed infrastructure for EVSE. The team has reached out to Eversource for additional information about potential funding. Eversource indicated that they are still waiting for 2021 funding to be awarded but are accepting applications in the interim based on their confidence that funding will be awarded. The project team will continue to investigate funding through Eversource to maximize the number of spaces with EV infrastructure.

2.4 Key Building Efficiency Metrics

The following should be provided for each building type (office, retail, multifamily, hotel, restaurant, etc.).

Vertical Envelope Performance

Note these values are preliminary and subject to change as the design is refined and the envelope backstop analysis is updated.

Vertical Envelope	ASHRAE Reference Building (ASHRAE 90.1-2013)			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	60%	R-13 + R-10 c.i.	U-value U-0.055	7%	R-13 + R-7.5 c.i.	U-value U-0.064
Opaque glass, curtain wall, shadowbox, spandrel	NA - ASHRAE reference building has no spandrel			57%	R-20	U-value U-0.10
Vision glass	40%	N/A	U-value U-0.42	36%	N/A	U-value U-0.23
	100%		Aggregate U U-0.201	100%		Aggregate U U-0.146
			Aggregate R R-5			Aggregate R R-6.8

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

Note these values are preliminary and subject to change as the design is refined and the energy model is updated. The peak heating and cooling values represent the coincidental peak with all efficiency measures and include operational diversity.

	ASHRAE Reference Building (ASHRAE 90.1 2013)	Proposed Building
Air Infiltration (ACH 50)	0.25 (CFM/sqft façade)	0.25 (CFM/sqft façade)
Aggregate Vertical Envelope R	U-0.201 (R-5)	U-0.146 (R-6.8)
Roof R	R-30 c.i. (U-0.032)	R-30 c.i. (U-0.032)
Lowest level conditioned floor above unconditioned space (if any) R	R-19 (U-0.052)	R-10 c.i. (U-0.074) TBC
Cooling End Use (kBtu/sf-yr)	8.8 kBtu/sf-yr	8.6 kBtu/sf-yr
Heating End Use (kBtu/sf-yr)	76.5 kBtu/sf-yr	11.8 kBtu/sf-yr
Peak Heating (Btu/hr-sf)	38.9 Btu/sf-yr	23.1 Btu/sf-yr
Peak Cooling (Btu/hr-sf)	59.7 Btu/sf-yr	57.2 Btu/sf-yr
Site EUI (kBtu/hr-sf)	191 kBtu/sf-yr	114 kBtu/sf-yr

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 envelope will utilize efficient and high-performing materials including low-e, argon-filled triple pane glazing. All opaque wall and roof assemblies will strive to use materials that reduce embodied carbon, have high recycled content, and minimize thermal bridging. The exterior and interior lighting will employ high efficiency LED fixtures and meet the targeted LPD and controls goals. The design intends to collect

stormwater and HVAC equipment condensate and reuse the water for indoor flush fixtures, exterior irrigation demand, and cooling tower makeup.

The heating plant is composed of air source heat pumps and a heat recovery chiller to provide a measure of electrification. The building also has high efficiency condensing boilers sized for the entire heating load for backup and/or when heat pump capacity is exceeded. The heat recovery chiller allows for energy to be reused when simultaneous heating and cooling loads exist as well as providing electrification of the heating plant. The air source heat pumps allow for partial electrification of the heating plant and to reduce natural gas usage by the boilers. This approach was taken to reduce the building natural gas usage substantially. The current analysis indicates approximately a 90% reduction in natural gas compared to a building served by only natural gas boilers.

The cooling plant is composed of water-cooled centrifugal chillers paired with cooling towers and a heat recovery chiller, along with a water-side economizer. The cooling plant will be entirely electric. The intent is for the centrifugal chillers to provide the majority of cooling with air source heat pumps to provide cooling during peak cooling conditions. The heat recovery chiller allows for energy to be reused when simultaneous heating and cooling loads exist. The intent is to provide a system that is able to respond to cooling loads in the most efficient way.

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 project will strive to minimize dependence on natural gas by prioritizing electrification of building systems to the greatest extent possible. The design team is currently evaluating electrification options that would integrate with the long-term vision for a low-carbon New England power grid. The design currently includes electric water-cooled centrifugal chillers, air-source heat pumps, and a heat recovery chiller which are optimally sized to generate the majority of the chilled water and heating hot water required to condition the building. Condensing boilers supply supplemental heating hot water under peak conditions. The building is set-up so that all base building systems can be transitioned to all-electric over time. Eliminating the natural gas supply entirely may be challenging since the tenant labs require flexibility for conducting experiments and research. A potential pathway to net zero carbon would include replacement of supplemental condensing hot water boilers with electric heat pumps or electric resistance boilers by 2040. By 2050, tenants would need to be engaged for a commitment to eliminate natural gas consumption.

To support the City of Somerville's net-zero goals and the projects path to LEED Platinum, the project intends to purchase Green-e Energy certified renewable energy credits to offset 50% of the base building's annual energy use.

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.

The team is considering applying for the Eversource / Mass Save - New Buildings and Major Renovations Path 2: Whole Buildings EUI Reduction incentive program. This incentive program provides financial incentives based on a percent EUI reduction beyond the Mass Save baseline and provides a cost share for the technical assistance and energy modeling fees. To be eligible, the project must have a goal of meeting at least 10% EUI reduction from the Mass Save baseline, which is based on the Massachusetts energy code using either International Energy Conservation Code - IECC 2018 or ASHRAE 90.1-2016.

- An overview of the incentive program is available here:
<https://www.masssave.com/en/saving/business-rebates/new-buildings-and-major-renovations/whole-building-energy-use-intensity-reduction>
- A full description of the current Mass Save baseline is available here: https://www.masssave.com/-/media/Files/PDFs/Business/Energy_Code_Baseline.pdf?la=en&hash=1D0A5D90B03A32B2833D3D0EE3522E573B67D52

Additionally, the team is considering applying for the Eversource Electric Vehicle Charging Station Program. This program provides financial support for all of the associated infrastructure costs to support EV chargers at up to 5% of parking spaces when the building is complete, and an additional 5% of parking spaces in the future.

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?

At this time, renewable energy generation systems are not planned for the project roof since the majority of the roof area is allocated to mechanical equipment required for the lab program. Areas not dedicated to mechanical equipment, have been designed as green roofs. The roof is expected to primarily be used for mechanical equipment throughout the life of the building, therefore renewable energy generation systems are unlikely to be added in the future. The project will rely on the electric grid to provide power for the building heating and cooling systems. Additionally, the project will procure RECs and/or carbon offsets until the grid is further decarbonized.

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

The Proponent does not currently anticipate any on-site energy storage.

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.

The design team will coordinate with the local utility company during the next phase of the design. Introductory Load Letters have been developed for submission with Eversource.

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).

The building's roof areas will incorporate high albedo roofing materials to help mitigate heat island effects. In addition, approximately 6,176 square feet of green roof is planned for the mechanical penthouse roof and 2,624 square feet of green roof on the Level 2 canopy. Note there are limitations of the building's roof area due to requirements for base building mechanical equipment and tenant equipment.

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?

According to the Somerville Climate Change Vulnerability Assessment and the figures included in this Questionnaire, the site is vulnerable to precipitation-based flooding and sea level rise and storm surge when considering the 100-yr 2030 Storm with 1-yr 2030 Sea Level Rise (SLR), the 10-year 2070 Storm with 1-yr 2070 SLR, and the 100-yr 2070 Storm with 100-year 2070 SLR. Future flood depths at the site are projected to be more than 3.0 feet.

Additionally, the Project Site lies within an area of high outdoor heat exposure and consequently will experience negative impacts from the urban heat island effect, which will threaten utility systems, building performance, and public health.

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 mechanical systems for the project include a dedicated outdoor air system serving either fan coil units or active chilled beams, three water-cooled centrifugal chillers, a water-side economizer, air source heat pumps, and a heat recovery chiller to provide efficient cooling to the indoor spaces. The building will incorporate a high thermal performance envelope including triple pane glazing that aligns with the provisions of the ECC 2018 of Massachusetts. Additionally, the roof and site hardscape will incorporate high albedo materials to reduce the effects of urban heat island.

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

The building cooling is sized for ASHRAE 0.4% design day (91/73 F wb/db)

This project is utilizing advanced heat recovery systems and premium efficiency chillers, selected and sized to efficiently provide ventilation air and cooling chilled water to the tenant zone. At the tenant zone, decoupled cooling systems (fan coil units, heat pumps, and/or active chilled beams) will provide efficient demand control zone-level cooling. These decoupled cooling systems, combined with demand control ventilation, will limit the building's use of outdoor air to the minimum amount required for ventilation purposes.

5.3 List any indoor spaces without cooling and their uses.

Parking garage, fuel oil room, dry valve rooms, loading dock, incoming gas skid room, stairwells, entry vestibules are not provided space cooling.

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

The project's uncovered roof and hardscape will be high albedo to limit heat island effect and contribute to a more comfortable outdoor space. Materials will be selected to comply with the solar reflectance index requirements listed in the SZO, which align with the LEED v4 Heat Island Reduction credit requirements. The team is also working to develop strategies to reduce heat island associated with paving in the civic space, including vegetated shading and high solar reflectance materials. Approximately 8,262 square feet of uncovered hardscape exists in the project currently. To limit heat island effect from these surfaces the design team is looking at pavers with high albedo and light-colored standard concrete for sidewalks. Other hardscape areas are located beneath building canopies which provides adequate shading and reduces further effects of heat island. The Project incorporates approximately 13,250 SF of landscaped areas both on and off-site. The landscaping on-site (excluding the green roof) will be 100% native species that are appropriate for the climate. Lastly, the project design consolidates parking in a four-level underground parking structure, which helps to reduce potential heat island effect associated with traditional surface parking lots.

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)

As described in Section 4, according to Somerville Climate Change Vulnerability Assessment and figures contained in this Questionnaire, the project site will be vulnerable to precipitation-based flooding and sea level rise and storm surge based on projections for 2030 and 2070. The Project Site is vulnerable to increasing precipitation-based flooding during the 100-year 2030 storm (1-year 2030 SLR), the 10-year 2070 storm (1 year 2070 SLR), and the 100 year 2070 storm (100 year 2070 SLR).

Precipitation events will become more frequent and more intense, leading to flooding in areas of the City where the drainage system may not have enough capacity and much of the area is covered with impervious surfaces.

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	7.3 (ft)	Proposed Site Elevation - High	8.35 (ft)
Lowest elevation of life-safety systems	9.64 (ft)	Proposed First Floor Elevation	8.35 (ft)
Nearest flood elevation for the 2070 10-year storm	12 (ft)	Nearest flood elevation for the 2070 100-year storm	13 (ft)

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?

The first floor uses of the building include retail/amenity space, bicycle storage, miscellaneous storage areas, lobby, restrooms, loading dock, and mechanical/electrical support spaces. There is a parking garage located below ground which serves the building.

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 finished floor elevation (FFE) of the proposed building will be at elevation 8.35 feet, which will be resilient to precipitation-based flooding from the current 10-year storm event in the area. All electrical systems, including the transformer vault on the ground floor will be elevated above the FFE to elevation 13.35 feet be resilient to 2070 10-year storm event flooding. The fire pump and jockey pump sit on concrete pads which are approximately 12" high. The fire pump's drip rim base is about 3-1/2" high so the fire pump is located at elevation 9.64 feet.

The following equipment is below flood elevation: fuel oil system; glycol system to heat exterior soffits and parking garage ceiling; parking garage systems (electrical rooms, ventilation fans); water entry and booster pumps; hot water heaters; storm water reclaim system; groundwater and garage sump pumps; and irrigation system. The design of the building will consider watertight wall penetrations for utilities at the building face to prevent the intrusion of elevated groundwater levels.

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)

The elevation of the site and the elevation of the building and ground floor are set to allow at grade access to the building ground floor, loading and garage from the adjacent streets. Raising the building, ground floor and access to garage and loading to an elevation above projected future flooding is not practical. The Project will rely on resilience measures including a combination of wet flood-proofing and dry flood-proofing and raising critical building systems (transformers and main electrical room equipment).

The ground floor elevation is set at elevation 8.35 feet and will require a combination of both wet and dry flood-proofing to improve resiliency, including strategies to dry flood-proof vertical penetrations in the ground floor leading to the underground garage, e.g. elevator shafts.

The garage entrance is set at elevation 7.9 feet and will require dry flood-proofing measures be installed at a future date. All electrical systems and life safety systems, including the transformer pads within the building on the ground floor will be elevated above the FFE to elevation 13.35 feet be resilient to 2070 10-year storm event flooding.

Wastewater and stormwater backflow prevention will be designed into building infrastructure in order to maintain operations and prevent backflow of sewer and stormwater into the building through these systems during flooding events.

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 section is not applicable, the Project does not include any residential uses.

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?

All chemical storage is located at Level 1. The fuel oil tank in the parking garage will be provided with hold-down straps to prevent its movement (and line breaks) in the event the garage is flooded.

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?

According to the figures included in this Questionnaire showing precipitation-based flooding in 2030 and 2070, street flooding depths at the Site will be in excess of 3 feet, therefore the site will not be accessible by typical or emergency vehicles during projected future 10-year and 100-year events.



Site Plan Application LEED Memo

74 Middlesex Avenue

Atelier Ten has compiled a list of the LEED credits being targeted to support the LEED v4 Platinum certifiable goal for 74 Middlesex. All credits currently designated as high achievability in the provided LEED Appraisal are included in this memo along with a description of how the project's proposed design intends to meet the credit criteria.

The project will be designed to achieve LEED Platinum under LEED v4 BD+C: Core and Shell. Where beneficial to the project, select v4 credits have been substituted for the v4.1 version as permitted by GBCI. Credit substitutions are indicated in the LEED Appraisal as well as in this memo. The LEED Appraisal details the proposed path for the project to earn a LEED v4 Platinum certifiable rating, which requires compliance with all 12 prerequisites and selected credits to meet the minimum 80-point threshold. The current LEED Appraisal indicates 84 points in high achievability, which is above the minimum 80-point threshold for Platinum. During the next phase of design, additional information and coordination with the design team is needed to verify that the targeted points remain achievable.

To achieve LEED Platinum certifiable, Atelier Ten recommends targeting a minimum score of 85 points, which provides a 5-point buffer to account for GBCI's review and potential design modifications. The design team members should focus on addressing the action items for prerequisites and credits that indicate their firm named as a responsible party in the "Responsible" column in the LEED Appraisal, with the goal of verifying compliance with the 'High' achievability points.

LONDON
GLASGOW
EDINBURGH
NEW YORK
NEW HAVEN
SAN FRANCISCO
BANGKOK
SINGAPORE
MELBOURNE
SYDNEY

104 West 29th Street, 8th Floor
New York, New York 10001
T +1 (212) 254 4500
F +1 (212) 254 1259
newyork@atelierten.com
atelierten.com

Location & Transportation

LTc2 Sensitive Land Protection (2 points)

The project site is located on previously developed land which meets the requirements to achieve this credit.

LTc3 High Priority Site (3 points)

Haley & Aldrich has indicated contamination of the project site and confirmed that the site will undergo remediation in accordance with MassDEP requirements to achieve this credit.

LTc4 Surrounding Density and Diverse Uses (4 points)

As the project is located in an urban environment, the site is within a ½ mile of at least 8 basic services. The Walk Score compliance path is recommended based on the surrounding density of the project. The site has a Walk Score of 89 enabling the achievement of 4 LEED points.

LTc5 Access to Quality Transit (v4.1) (4 points)

The qualifying MBTA rail and bus routes within the required proximity to the site can achieve 4 LEED points.

LTc6 Bicycle Facilities (v4.1) (1 point)

The project site is connected to a bicycle network and the current design includes a bike storage area providing at least 104 total storage spaces and 9 shower facilities meeting the LEED requirements for 101 long term storage spaces, 4 short-term spaces, and 9 showers based on the building occupancy estimates.

LTc7 Reduced Parking Footprint (v4.1) (1 point)

The project consolidates parking in a 4-level underground parking structure that includes 350 parking spaces, well below the required threshold of 647 spaces to meet LEED requirements. Elkus Manfredi Architects has confirmed that the project's maximum allowable parking will be less than or equal to the local code requirement of 350 parking spaces.

LTc8 Green Vehicles (v4.1) (1 point)

The proposed design includes 18 parking spaces with electric vehicle supply equipment (EVSE) to satisfy LEED electric vehicle criteria.

Sustainable Sites

SSc1 Site Assessment (1 point)

The design team will compile results of site assessments completed for the project including surveys for topography, hydrology, climate, vegetation, soils, human use, and human health effects.

SSc2 Protect or Restore Habitat (1 point)

Due to site limitations, it is unlikely that the project will be able to restore 30% of the previously developed site with native and adapted vegetation, however, one point can still be achieved through financial support to an accredited land trust or conservation organization on a dollar per square foot basis. Based on the proposed LEED boundary, the estimated financial support amount is approximately \$20,000.

SSc3 Open Space (v4.1) (1 point)

The site design includes approximately 21,200 square feet of physically accessible open space with about 7,000 square feet of that space being vegetated, thus meeting the requirements for the provision of outdoor space for at least 30% of the total site area with minimum 25% of that outdoor space being vegetated.

SSc4 Rainwater Management (v4.1) (3 points)

74 Middlesex incorporates stormwater management best practices that meet MEPA stormwater requirements for run-off rates and phosphorus levels. The project has been designed to retain rainfall from the 90th percentile rain event to achieve 3-points. Stormwater will be collected and reused for fixture flushing and irrigation.

SSc5 Heat Island Reduction (2 points)

Approximately 9,000 square feet of uncovered hardscape exists in the project currently. To limit heat island effect from these surfaces the design team is looking at pavers with high albedo and light-colored standard concrete for sidewalks. A portion of the hardscape areas are located beneath the building tower canopy which provides adequate shading and further reduces the effects of heat island. The site incorporates 7,000 square feet of additional landscaped areas and 8,750 square feet of green roof at Level 2 and the Mechanical Level, as well as water features in the civic space. The vegetation for the site has been chosen to be native or adapted plantings that are appropriate for the climate. Lastly, the project design consolidates parking in a 4-level underground parking structure, which helps to reduce potential heat island effect associated with traditional surface parking lots.

SSc6 Light Pollution Reduction (1 point)

The Somerville Zoning Ordinance requires the reduction of light pollution and glare from outdoor lighting fixtures and reduction of excessive light levels as existing fixtures are replaced over time. The project will design exterior lighting to meet LEED BUG requirements.

SSc7 Tenant Design and Construction Guidelines (1 point)

Greystar will develop tenant guidelines for design and construction to educate future tenants in implementing sustainable design and construction features in their fit outs.

Water Efficiency

WEp1 / WEc1 Outdoor Water Use Reduction (2 points)

To reduce irrigation demand, the design incorporates an efficient drip irrigation system for planting beds as well as native and adapted plantings. The design also includes a water reuse strategy to collect and treat stormwater and condensate for irrigation, showing potential to achieve a 100% reduction in outdoor potable water use.

WEp2 / WEc2 Indoor Water Use Reduction (6 points)

For indoor water use, the project is currently targeting a 26% indoor water use reduction through efficient fixture selection by specifying the following maximum flow rates:

- Water closet: 1.28 gpf
- Lavatory faucet: 0.35 gpm
- Shower: 1.25 gpm
- Kitchen faucet: 1.75 gpm

To accommodate gender neutral restrooms, the design does not include urinals which reduces the potential for indoor water savings through fixture specification. To increase water use savings, the project intends to collect and reuse stormwater and mechanical equipment condensate for flush fixtures to achieve a 50% overall potable water use reduction for indoor plumbing fixtures.

WEp3 Building-Level Water Metering (Prerequisite)

The current design includes building-level water metering. Greystar will sign a commitment letter agreeing to share water metering data with USGBC for 5 years to achieve this prerequisite.

WEc3 Cooling Tower Water Use (1 point)

The Design Team is evaluating strategies for reducing potable water required for the cooling towers. Due to the lab air change requirement, cooling tower make-up water represents a large demand accounting for about 36% of the project's annual water demand. As such, the Design Team aims to maximize cycles of concentration. To evaluate the appropriate cycles of concentration, a potable water analysis will be conducted. It is recommended that excess condensate water not used to supply irrigation and indoor fixture demand is reused for cooling tower make-up to reduce the potable water demand as feasible.

WEc4 Water Metering (1 point)

The project will include submetering of at least two water subsystems including irrigation and one of the following:

- Indoor plumbing fixtures and fittings
- Domestic hot water
- Reclaimed water
- Other process water

Energy & Atmosphere

EAp1 / EAc1 Fundamental Commissioning and Verification & Enhanced Commissioning

(6 points)

ICO Energy and Engineering has been engaged to verify that the design meets the owner's project requirements and comply with both the prerequisite and credit requirements. To meet the project's LEED Platinum goal, all four categories of enhanced commissioning are being pursued: fundamental, enhanced, monitoring-based, and envelope.

EAp2 / EAc2 Optimize Energy Performance *(13 points)*

The team is targeting at least 12 LEED points under the Optimize Energy Performance Credit. The current DD energy analysis indicates the Proposed Design achieves 40% energy use savings and 17% energy cost savings compared to an ASHRAE 90.1-2013 Baseline. Due to the focus on building electrification combined with the high cost of electricity in Somerville, the team has decided to pursue an Alternative Compliance Path (ACP) which considers carbon emissions and source energy, in addition to the traditional metric of energy cost. When considering these additional measures, the average calculated savings is approximately 31%, thus meeting the targeted energy performance goal for LEED and contributing up to 13 LEED points.

The Proposed Design savings are due to the following energy efficiency measures incorporated in the design which contribute to savings in heating, cooling, lighting, and fan energy:

- Triple pane glazing
- Reduced lighting power density (MA Energy Conservation Code 2018 Prescriptive LPDs)
- Dedicated outdoor air system serving fan coil units
- Staged exhaust fans
- Air-source heat pumps (ASHP)
- Condensing natural gas boilers
- Heat recovery chiller
- Water-side economizer

EAp3 Building-Level Energy Metering *(1 point)*

The project will include building-level energy meters for each utility energy source. Greystar will sign commitment letter agreeing to share water metering data with USGBC for 5 years to achieve this prerequisite.

EAp4 Fundamental Refrigerant Management *(Prerequisite)*

The mechanical systems are designed to not use CFC-based refrigerants in new heating, ventilating, air-conditioning, and refrigeration equipment.

EAc5 Renewable Energy (v4.1) *(5 points)*

To support the City of Somerville's net-zero goals and the project's path to LEED Platinum the project intends to purchase Green-e Energy certified tier 2 renewable energy credits to offset the building's annual site energy use.

Materials & Resources

MRp1 Storage & Collection of Recyclables *(Prerequisite)*

Collection and storage areas for recyclables will be included in the building to meet this prerequisite.

MRp2 Construction and Demolition Waste Management Planning *(Prerequisite)*

The contractor must develop and implement a construction and demolition waste management plan.

MRc1 Building Life-Cycle Impact Reduction (v4.1) *(2 points)*

Atelier Ten will be conducting a whole-building life-cycle assessment for the structure and enclosure of the building to understand the environmental impact, enabling the project to achieve at least 1 LEED point. The project will also target 5%-10% reductions in embodied carbon by incorporating impact reduction measures into the design to achieve additional points.

MRc2 Building Product Disclosure & Optimization: Environmental Product Declarations (v4.1) *(1 point)*

The design team and contractor will coordinate to specify and procure at least 10 permanently installed products from three different manufacturers that have environmental product declarations.

MRc3 Building Product Disclosure & Optimization: Sourcing of Raw Materials (v4.1) *(1 point)*

The design team and contractor will coordinate to specify and procure products that meet responsible sourcing and extraction criteria. The project will target at least 20% by cost of the total value of permanently installed products in the project.

MRc4 Building Product Disclosure & Optimization: Material Ingredients (v4.1) *(1 point)*

The design team and contractor will coordinate to specify and procure at least 10 different products from three different manufacturers that have Health Product Declarations, Cradle-to-Cradle Certificates, Declare Labels, UL Product Lens, Reach Optimization, etc. to meet material ingredient disclosure criteria. For an additional point, the design team is considering specifying 10 products that comply with material ingredient optimization criteria.

MRc5 Construction & Demolition Waste Management (v4.1) *(1 point)*

The contractor must implement the construction and demolition waste management plan and demonstrate a 75% waste diversion rate with at least 3 site-separated material streams.

Indoor Environmental Quality

EQp1 Minimum IAQ Performance *(Prerequisite)*

Minimum outdoor air intake flow requirements have been designed in accordance with ASHRAE 62.1-2010 and outdoor airflow measurement devices will be installed on the project.

EQp2 Environmental Tobacco Smoke (ETS) Control *(Prerequisite)*

Greystar will prohibit smoking inside the building and outside within 25 feet of building openings.

EQc1 Enhanced Air Quality Strategies *(2 points)*

The current design indicates MERV 14 and MERV 16 filters will be provided for supply air systems, meeting the minimum MERV 13 requirement. Spaces with potentially hazardous chemicals or gases will be provided with sufficient exhaust, deck-to-deck partitions, and self-closing doors. Additionally, 10' entryway systems will be provided for all regularly used entrances of the building and densely occupied spaces will be provided with CO₂ monitors.

EQc2 Low-Emitting Materials (v4.1) *(3 points)*

The design team is specifying VOC compliant materials for paints, coatings, adhesives, sealants, insulation, flooring, ceilings, and composite wood. The contractor must track products throughout construction.

EQc3 Construction IAQ Management Plan *(1 points)*

The contractor must develop and implement an indoor air quality (IAQ) management plan for the construction and pre-occupancy phases of the building that meets SMACNA IAQ Guidelines for Occupied Buildings Under Construction.

EQc4 Daylight (v4.1) *(2-3 points)*

Atelier Ten's preliminary daylight analysis indicates the potential for the project to earn up to 3 points. The provision of manual or automatic glare-control devices will be required as part of the base building or as a binding requirement in a signed tenant lease to achieve this credit.

EQc5 Quality Views *(1 point)*

Atelier Ten will conduct calculations to confirm compliance with the quality views requirements in CD.

Innovation

INc1.1 Innovation: O+M Starter Kit – Integrated Pest Management & Green Cleaning Policy

(1 point)

Greystar will provide both an Integrated Pest Management Plan and Green Cleaning Policy for the base building to meet the LEED v4 O+M requirements.

INc1.2 Innovation: Sustainable Wastewater Management *(1 point)*

This innovation credit requires reduction of wastewater from toilets and urinals or reuse of building wastewater on site. The proposed design includes stormwater and mechanical equipment condensate collection and reuse for irrigation and indoor flush fixtures to reduce potable water consumption.

INc1.3 Innovation: Purchasing – Lamps *(1 point)*

The project will include all LED lighting fixtures, meeting the requirements of the innovation credit.

INc1.4 Innovation: Occupant Comfort Survey *(1 point)*

Greystar will develop an occupant comfort survey to be distributed to building occupants in order to achieve this innovation credit.

INc1.5 Innovation: Exemplary Performance – SSc5 Heat Island Reduction *(1 point)*

To achieve exemplary performance for heat island reduction, the project will meet both options 1 and 2 of the credit, including the provision of all parking under cover.

INc2 LEED Accredited Professional *(1 point)*

This credit will be met by having a LEED AP on the design team.

Regional Priority

RPc1.1 Regional Priority: Rainwater Management *(1 point)*

To earn this regional priority credit the project must achieve at least 2 points for SSc4 Rainwater Management. The design team is targeting to retain at least the 90th percentile storm event using low-impact development and green infrastructure, exceeding the regional priority requirements.

RPc1.2 Regional Priority: Optimize Energy Performance *(1 point)*

To earn this regional priority credit the project must achieve at least 8 points for EAc2 Optimize Energy Performance. The design team is targeting to reduce building energy consumption by at least 40% compared to ASHRAE 90.1-2010 baseline for 13 LEED points, exceeding regional priority requirements.

RPc1.4 Regional Priority: Indoor Water Use Reduction *(1 point)*

To earn this regional priority credit the project must achieve at least 4 points for WEc2 Indoor Water Use Reduction. The design team is targeting a 50% indoor water use reduction for 6 LEED points, exceeding regional priority requirements.

LEED v4 Core & Shell

74 Middlesex Ave

last updated: 6/17/2021

Certified 40 to 49 points Silver 50 to 59 points Gold 60 to 79 points Platinum 80 or more points
Achievability rating: High = 90%, Med = 60%, Low = 10%, NP = not possible.

Achievability				Achievability rating: High = 90%, Med = 60%, Low = 10% / NP = Not possible.				
high	med	low	NP					
84	11	3	12	83 Projected Points				
1	0	0	0	Integrative Process				
1				IP Credit 1	Integrative Process	Perform preliminary energy model and water budget before the completion of SD and document in OPR & BOD.	A10 to coordinate with project team to integrate recommendations from SD energy analysis and water budget into the BOD and OPR.	A10
16	0	0	4	Location & Transportation				
			20	LT Credit 1	LEED for Neighborhood Development Location	Locate the project in within a development certified under LEED for Neighborhood Development.	Project site is not located in a LEED Neighborhood Development.	--
2				LT Credit 2	Sensitive Land Protection	Locate the development footprint on land that has been previously developed - OR - does not meet LEED criteria for sensitive land (prime farmland, floodplains, habitat for threatened species, near water bodies, in or near wetlands).	The project site is located on previously developed land.	A10
3				LT Credit 3	High Priority Site	Locate the project on an infill site in historic district (2pts) - OR - site with priority designation (2pts) - OR - brownfield site where contaminated soil/groundwater remediation is required (3pts).	Haley Aldrich has indicated that the site will be remediated as part of the project.	Haley Aldrich
4			2	LT Credit 4	Surrounding Density and Diverse Uses	Locate on a site with an existing density of 22,000sf/acre - 35,000 sf/acre and within 1/2 mile of 4-8 basic services.	The project site is located within a 1/2 mile of at least 8 basic services. The Walk Score compliance path is recommended based on the surrounding density for the site. The project site has a walkscore of 89 which complies for 4 points.	A10
4			2	LT Credit 5	v4.1 Access to Quality Transit	Locate any functional entry of the project within 1/2 mile of a rail station or ferry terminal that meets min. daily transit service - OR - 1/4 mile of bus, streetcar or rideshare that meets min. daily transit service.	Qualifying MBTA rail and bus routes (Orange Line, 95, 90, 89, 101) can achieve 4 points.	A10
1				LT Credit 6	v4.1 Bicycle Facilities	Provide short term (2.5% peak visitors) and long term (5% all regular occupants) bike parking within 200ft (short term) of any main entrance and 300 ft (long term) of any functional entry, FTE showers, and access to bicycle network.	The project site is connected to a bicycle network. EMA has confirmed long-term bicycle storage of 101 spaces and short-term storage of 4 spaces will be met. 100% DD drawings indicate 9 shower facilities, satisfying LEED criteria.	EMA / A10
1				LT Credit 7	v4.1 Reduced Parking Footprint	No off-street parking serving project - OR - provide 30% reduction in parking capacity from base ratios for parking spaces, by building type and do not exceed minimum local code requirements - OR - provide carshare vehicle parking spaces for at least 1% of total parking spaces; if the project has fewer than 100 parking spaces, provide one carshare vehicle parking space.	The 100% DD design complies with requirements through inclusion of 350 parking spaces. EMA has confirmed local code requirement of 350 parking spaces is not exceeded.	EMA / A10
1				LT Credit 8	v4.1 Electric Vehicles	Install electric vehicle supply equipment (EVSE) for 5% (or 2 spaces, whichever is greater) of parking spaces OR make 10% of parking spaces (or at least 6 spaces) EV ready for future use.	The 100% DD parking count indicates 18 EV spaces, satisfying the 5% requirements.	EMA / BR+A
10	0	1	0	Sustainable Sites				
Y				SS Prereq 1	Construction Activity Pollution Prevention	Create and implement erosion control plan that meets the 2003 EPA Construction General Permit.	Civil engineer to develop erosion and sedimentation control plan and specifications. Contractor to implement ESC plan.	VHB / Contractor
1				SS Credit 1	Site Assessment	Complete comprehensive site survey; topography, hydrology, climate, vegetation, soils, human use and human health effects.	Design team to work to complete a comprehensive site assessment with guidance from A10.	EMA / A10 / MKD / VHB
1		1		SS Credit 2	Protect or Restore Habitat	Protect 40% of greenfield area, restore soils, and restore 30% of previously developed site with native/adapted plants (2pts) - OR - provide \$0.40/sf to accredited land trust (1pt).	Current landscape accounts for 14% of the site. Project is not likely to achieve restoration of 30% of all portions of the site with native plantings. Estimated cost to achieve Option 2 is \$20,000.	Greystar
1				SS Credit 3	v4.1 Open Space	Provide outdoor space greater than or equal to 30% of the total site area (including building footprint), with min. 7.5% of the total site area (25% of the outdoor space) being vegetated area.	Based on the 100% DD documents, the site includes 21,000 sq. ft. of open space meeting the 30% threshold, and 7,000 sq. ft. of that open space is vegetated meeting the 25% threshold.	A10 / MKD
3				SS Credit 4	v4.1 Rainwater Management	Retain runoff for the 80th percentile (1pt) or 85th percentile (2pts) or 90th percentile (3pts) using low-impact development (LID) and green infrastructure (structural or non-structural). For zero lot line, reduce the rainfall event for the 70th percentile (1pt), 75th percentile (2pts) or 80th percentile (3pts) - OR - retain on site the increase in runoff volume between the proposed design conditions and the natural land cover conditions that existed prior to any disturbance.	As noted in the Somerville Zoning Ordinance - To every extent practicable, storm water should be reused on site for irrigation or other purposes. Civil engineer to develop design strategies to retain the 90th percentile rain event on site.	VHB
2				SS Credit 5	Heat Island Reduction	Meet high albedo requirements for roof and site (2pts) - OR - place a minimum of 75% parking under cover (1pt).	EMA to specify roof materials with SRI of 82 or greater to meet LEED credit requirements and Somerville Zoning Ordinance. If entire qualifying roof area has an SRI of 82, approximately 1,170 square feet of site hardscape must have a SR of 0.33 to achieve 2 points for Option 1. An additional EP point can be earned for placing 100% of parking under cover.	EMA / MKD / A10
1				SS Credit 6	Light Pollution Reduction	Meet uplight and light trespass requirements, and do not exceed exterior signage luminance requirements.	The Somerville Zoning Ordinance requires the reduction of light pollution and glare from outdoor lighting fixtures and reduction of excessive light levels as existing fixtures are replaced over time. EMA/Exterior lighting designer to design exterior lighting to meet LEED BUG requirements.	EMA / Exterior Lighting Designer
1				SS Credit 7	Tenant Design and Construction Guidelines	Publish an illustrated document to educate tenants in implementing sustainable design and construction features in their tenant improvement build-outs.	Greystar to develop tenant design and construction guidelines.	Greystar

10	1	0	0	Water Efficiency			Standard	Comments	Responsible
Y				WE Prereq 1	Outdoor Water Use Reduction: 30%		Reduce outdoor water use by 30% over the baseline specified in LEED.	MKD to provide outdoor water use calculations and to confirm that the project will meet this prerequisite.	MKD
Y				WE Prereq 2	Indoor Water Use Reduction: 20%		Reduce indoor water use by 20% over the baseline specified in LEED, use fixtures with WaterSense label, and meet requirements for process water use.	To align with the project's LEED Platinum goal, the design assumes collection of stormwater and condensate for reuse in indoor flush fixtures to achieve a 50% water use reduction. BR+A to confirm that process water requirements will be met.	A10 / BR+A
Y				WE Prereq 3	Building-Level Water Metering		Install permanent water meters for building and grounds, and commit to share data with USGBC for 5 years.	BR+A to confirm implementation of building-level water metering and Greystar to commit to share data with USGBC for 5 years.	BR+A / Greystar
2				WE Credit 1	Outdoor Water Use Reduction: 50% Reduction / No Potable Water Use		Reduce potable water used for irrigation by 50% (1pt) - AND - use no potable water for irrigation (1pt).	Design to reuse stormwater for irrigation demand. Landscape architect to confirm that no potable water will be used for irrigation.	MKD
6				WE Credit 2	Indoor Water Use Reduction: 25% / 30% / 35% / 40% / 45% / 50%		Reduce building water use over LEED baseline.	To align with the project's LEED Platinum goal, the design assumes collection of stormwater and condensate for reuse in indoor flush fixtures to achieve a 50% water use reduction.	A10
1	1			WE Credit 3	Cooling Tower Water Use		Conduct a water analysis to optimize cooling tower cycles. Maximizing cycles (1pt), >10 cycles or 20% non-potable water use (2pts).	BR+A to evaluate cycles of concentration and design team to evaluate feasibility of stormwater and condensate reuse for cooling tower makeup water for second point.	BR+A
1				WE Credit 4	Water Metering		Install permanent water meters for two or more water subsystems.	BR+A to confirm metering of at least two water subsystems.	BR+A
24	4	0	5	Energy & Atmosphere			Standard	Comments	Responsible
Y				EA Prereq 1	Fundamental Commissioning and Verification		Engage commissioning agent by end of DD, develop and execute a commissioning plan, and prepare O&M plan for current facilities.	Greystar has engaged ICO as the qualified commissioning authority to provide fundamental commissioning for the project.	ICO
Y				EA Prereq 2	Minimum Energy Performance		Reduce energy cost by 5%, compared to ASHRAE 90.1-2010, Appendix G; meet mandatory provisions of ASHRAE 90.1-2010. -OR Comply with HVAC and service water heating requirements for the climate zone in ASHRAE 50% Advanced Energy Design Guide, and meet ASHRAE 90.1-010 mandatory and prescriptive provisions.	A10 to perform an energy analysis for the building and confirm that this prerequisite will be met.	A10 / BR+A
Y				EA Prereq 3	Building-Level Energy Metering		Install meters to provide data on total energy consumption, and commit to share data with USGBC for 5 years.	BR+A to provide building-level energy meters for each utility energy source. Greystar to share at least 5 years of data with USGBC.	BR+A / Greystar
Y				EA Prereq 4	Fundamental Refrigerant Management		Eliminate CFCs in building HVAC&R, and complete CFC phase-out conversion before project completion for any CFC equipment to remain.	BR+A to confirm compliance with refrigerant use requirements.	BR+A
6				EA Credit 1	Enhanced Commissioning		Complete CD review, post occupancy review, and recommissioning manual (3pts), and develop monitoring procedures (+1pt) - AND/OR - complete envelope Cx (+2pts)	Greystar has engaged ICO as the qualified commissioning authority to provide enhanced commissioning scope, monitoring-based commissioning, and envelope commissioning.	ICO
3				EA Credit 2	Optimize Energy Performance: 3% / 5% / 7%		Reduce building energy cost by 3% / 5% / 7% compared to ASHRAE 90.1-2010, Appendix G.	Project team to target at least a 26% energy cost savings compared to ASHRAE 90.1-2010 Appendix G Baseline. A10 to perform energy analysis and coordinate energy efficiency measures with design team.	A10 / BR+A
3				EA Credit 2	Optimize Energy Performance: 9% / 11% / 13%		Reduce building energy cost by 9% / 11% / 13% compared to ASHRAE 90.1-2010, Appendix G.		
3				EA Credit 2	Optimize Energy Performance: 15% / 17% / 19%		Reduce building energy cost by 15% / 17% / 19% compared to ASHRAE 90.1-2010, Appendix G.		
3				EA Credit 2	Optimize Energy Performance: 21% / 23% / 26%		Reduce building energy cost by 21% / 23% / 26% compared to ASHRAE 90.1-2010, Appendix G.		
1	2			EA Credit 2	Optimize Energy Performance: 29% / 32% / 35%		Reduce building energy cost by 29% / 32% / 35% compared to ASHRAE 90.1-2010, Appendix G.	BR+A to confirm compliance with the credit requirements and design systems with low-impact refrigerants.	BR+A
		3		EA Credit 2	Optimize Energy Performance: 39% / 43% / 47%		Reduce building energy cost by 39% / 43% / 47% compared to ASHRAE 90.1-2010, Appendix G.		
	1			EA Credit 3	Advanced Energy Metering		Install meters for tenant spaces to independently meter energy consumptions for all systems dedicated to tenant space, with minimum of one meter per energy source per floor. Install advanced metering for base-building energy sources, per reference guide.	BR+A to provide at least one meter per energy source per floor for the building.	BR+A
		2		EA Credit 4	v4.1 Grid Harmonization		Design building and equipment for participation in demand response programs through load shedding or shifting for any project, even if program is available (2pts) - OR - if DR program not available, provide infrastructure for future (1pt) OR implement one or more of the Load Flexibility and Management Strategies (1-2 pts)	Credit achievability may be challenging due to limited Owner-controlled areas in C&S building. BR+A to coordinate with Greystar to investigate potential for a system with the capability for real-time, fully-automated demand response for at least 10% of the estimated peak electric demand.	BR+A / Greystar
5				EA Credit 5	v4.1 Renewable Energy		Use on-site renewable energy systems or procure renewable energy from offsite sources for all or a portion of the building's annual energy use (1-5 pts).	Credit can be achieved through purchase of RECs and carbon offsets, or through combination of on-site renewable energy generation and purchase of offsets. Somerville Zoning Ordinance requires all new buildings to include a green roof, PV, or both for 100% of the roof area not occupied by building systems equipment or required outdoor amenity spaces.	Greystar
	1			EA Credit 6	Enhanced Refrigerant Management		Select refrigerants with low global warming potential and ozone depletion potential.	BR+A to confirm compliance with the credit requirements and design systems with low-impact refrigerants.	BR+A
6	4	1	3	Materials & Resources			Standard	Comments	Responsible
Y				MR Prereq 1	Storage & Collection of Recyclables		Provide space for the collection and storage of paper, cardboard, glass, plastic, metals, and at least two of the following: batteries, mercury-containing lamps, and electronic waste.	Recycling receptacles are required in conjunction with litter receptacles. EMA to provide location of recycling storage areas. The prerequisite will be met.	EMA
Y				MR Prereq 2	Construction and Demolition Waste Management Planning		Develop and implement a construction and demolition waste management plan.	Contractor to develop and implement a construction and demolition waste management plan.	Contractor
2	1		3	MR Credit 1	v4.1 Building Life-Cycle Impact Reduction		Option 2: Whole-building life-cycle assessment. Path 1 (1pt) (conduct a cradle-to-grave LCA of the structure and enclosure), Path 2 (2pts) (conduct a LCA of the projects structure and enclosure demonstrating a min. 5% reduction in at least 3 of the 6 categories (one must be GWP), Path 3 (3pts) (conduct a LCA of the structure and enclosure demonstrating a 10% reduction in 3 impact categories, Path 4 (4pts) (demonstrate a 20% reduction for GWP and 10% reduction in two other impact categories and incorporate reuse and/or salvage materials.)	A10 to conduct a whole-building life-cycle assessment for the structure and enclosure of the building.	A10
1		1		MR Credit 2	v4.1 Building Product Disclosure & Optimization: Environmental Product Declarations		Use 10 products sourced from three different manufacturers that meet disclosure criteria (1pt) - AND/OR - use products that have an embodied carbon optimization report or action plan separate from the LCA or EPD, for 10% by cost (1 pt.) or 10 products from 3 different manufacturers.	EMA to specify at least 10 permanently installed products from three different manufacturers with EPDs. Contractor to track compliant products throughout construction.	EMA / Contractor
1	1			MR Credit 3	v4.1 Building Product Disclosure & Optimization: Sourcing of Raw Materials		Use products sourced that meet at least one responsible sourcing and extraction criteria (extended producer responsibility and/or take-back program (50%), bio-based materials (50%-100%), FSC certified wood products (100%), material reuse (200%), recycled content (100%)) for at least 20% from at least 3 different manufacturers (1 pt.) / or 40% from at least 5 manufacturers of the total materials cost (2pts).	EMA to specify products that meet responsible sourcing and extraction criteria. Contractor to track compliant products throughout construction and target at least 20% by cost of the total value of permanently installed products in the project.	EMA / Contractor
1	1			MR Credit 4	v4.1 Building Product Disclosure & Optimization: Material Ingredients		Use 10 products sourced from five different manufacturers that demonstrate the chemical inventory of the products (1pt) - AND/OR - use products from at least three different manufacturers that document their material ingredient optimization by 10% material cost or 10 compliant programs (1pt) through a Material Ingredient Screening and Optimization Action Plan, Advanced Inventory & Assessment or Material Ingredient Optimization.	EMA to specify at least 10 permanently installed products from three different manufacturers with HPDs, C2C labels, Declare labels, UL Product Lens, Reach Optimization, etc. to meet Option 1 for 1 point. EMA to also target 10 products that comply with material ingredient optimization criteria for an additional point, with guidance from A10. Contractor to track compliant products throughout construction.	EMA / Contractor
1	1			MR Credit 5	v4.1 Construction & Demolition Waste Management		Follow the Waste Management Plan and divert at least 50% (1pt) - OR - generate less than 15 lbs/sqft of waste (1pt) - OR - generate less than 10 lbs/sqft of waste (2pts).	Contractor to implement the C+D WMP, and demonstrate at least 50% diversion rate.	Contractor
7	2	1	0	Indoor Environmental Quality			Standard	Comments	Responsible

Y				EQ Prereq 1	Minimum IAQ Performance	For mechanically ventilated spaces: Meet minimum outdoor air intake flow requirements determined by ASHRAE 62.1-2010 ventilation rate procedure, meet sections 4 through 7 of ASHRAE 62.1-2010, and monitor outdoor air intake flows.	BR+A to confirm that the minimum outdoor air intake flow requirements are met in accordance with ASHRAE 62.1-2010 and provide outdoor airflow measurement devices.	BR+A	
Y				EQ Prereq 2	Environmental Tobacco Smoke (ETS) Control	Prohibit smoking inside building, locate exterior smoking areas at least 25 feet away from building, and post no-smoking signage within 10 ft of all building entrances.	Greystar to confirm smoking will be prohibited inside the building and prohibited outside within 25 feet of building openings. EMA to include no-smoking signage at building entries.	Greystar / EMA	
2				EQ Credit 1	Enhanced Air Quality Strategies	Provide entryway systems, prevent interior cross-contamination, and specify MERV 13 filters (1pt) - AND/OR - prevent exterior contamination or increase ventilation or monitor CO2 (1pt).	BR+A to confirm at least MERV 13 filters will be provided for supply air systems, sufficient exhaust for spaces with potentially hazardous chemicals/gases, and design for one of the following enhanced IAQ strategies: exterior contamination prevention; increased ventilation; CO2 monitoring; other source control monitoring. EMA to provide 10' entryway systems at all regularly-used entries, and self-closing doors and deck-to-deck partitions in spaces with potentially hazardous chemicals/gases. Walk off mats shown on drawing A101 at three vestibule entrances. MERV 13 filters to be added to drawings.	BR+A / EMA	
3				EQ Credit 2	v4.1 Low-Emitting Materials: 2 / 3 / 4 / 5 categories	Achieve the threshold level of compliance with VOC emissions and content standards for 2, 3, 4 or 5 product categories 1-3 pts + exemplary.	EMA to specify compliant materials for paints, coatings, adhesives, sealants, insulation, flooring, ceilings, and composite wood. Contractor to track products throughout construction.	EMA / Contractor	
1				EQ Credit 3	Construction IAQ Management Plan	Develop an IAQ plan for construction and preoccupancy phases that meets SMACNA IAQ Guidelines for Occupied Buildings Under Construction.	Contractor to develop and implement an indoor air quality (IAQ) management plan for the construction and preoccupancy phases of the building.	Contractor	
	2	1		EQ Credit 4	v4.1 Daylight: 40% / 55% / 75%	Provide manual or automatic glare-control devices AND Option 1: Average SDA _{300/50%} value for regularly occupied floor area is at least 40% (1pt), 55% (2pts), 75% (3pts) - OR - Option 2: meet illuminance level requirements for 55% (1pt), 75% (2pts), 90% (3pts) of regularly occupied floor area through simulation - OR - Option 3: meet illuminance level requirements for 55% of regularly occupied floor area at 1 time (1pt), 75% at 2 times (2pts), 90% at 2 times (3pts) through measurement.	EMA to confirm manual or automatic glare-control devices will be included in the base building. A10 has conducted a daylight analysis during DD.	A10	
1				EQ Credit 5	Quality Views	Provide direct views to the outside that meet 2 out of 4 LEED view criteria in 75% of regularly occupied spaces.	A10 to conduct calculations to confirm compliance with quality views requirements.	A10	
6	0	0	0	Innovation			Standard	Comments	Responsible
1				IN Credit 1.1	Innovation, O+M Starter Kit	Pursue LEED O+M credits that include Site Management Policy, Systems, O+M Plan, Purchasing, Waste and Renovation Policies, Green Cleaning Policy, and IPM plan.	Greystar to provide LEED v4 policies for 2 of the following: Site Management, Purchasing and Waste, Facility Maintenance and Renovations, Green Cleaning, and Integrated Pest Management.	Greystar	
1				IN Credit 1.2	Innovation, Sustainable Wastewater Management	Reduce wastewater from toilets and urinals from the baseline - OR - Reuse building wastewater on site.	BR+A and A10 to coordinate on potential strategies to reuse water on site to reduce non-potable water consumption.	BR+A / A10	
1				IN Credit 1.3	Innovation, Purchasing - Lamps	Implement a lighting purchasing plan that specifies an overall building average of 35 picograms of mercury per lumen-hour or less.	The 100% DD light fixture schedule indicates all lighting will be LED.	LAM	
1				IN Credit 1.4	Innovation, Occupant Comfort Survey	Administer at least one occupant comfort survey every two years to collect anonymous responses regarding at least one of the following: acoustics, building cleanliness, indoor air quality, lighting, and thermal comfort. The responses must be collected from a representative sample of building occupants making up at least 30% of the total occupants.	Greystar to develop occupant comfort survey to be distributed to building occupants.	Greystar	
1				IN Credit 1.5	Innovation, Exemplary Performance - SSc5 Heat Island Reduction	Achieve Option 1 and locate 100% of parking under cover.	The project is locating 100% of parking in a below grade garage. Achievement of Option 1 for Heat Island Reduction can allow for the project to earn a point for exemplary performance.	A10	
1				IN Credit 2	LEED™ Accredited Professional	LEED Accredited Professional on design team.	A10 has multiple LEED APs on the project team, meeting credit requirements.	A10	
4	0	0	0	Regional Priority			Standard	Comments	Responsible
1				RP Credit 1.1	Regional Priority, SSc4 Rainwater Management	Achieve at least 2 points for SSc4 Rainwater Management	Project team is targeting to retain at least the 90th percentile using low-impact development and green infrastructure, exceeding regional priority requirements.	VHB	
1				RP Credit 1.2	Regional Priority, EAc2 Optimize Energy Performance	Achieve at least 8 points for EAc2 Optimize Energy Performance	Project team is targeting to reduce the building energy cost by at least 25% compared to ASHRAE 90.1-2010 baseline, exceeding regional priority requirements.	BR+A / A10	
1				RP Credit 1.3	Regional Priority, MRc1 Building Life-Cycle Impact Reduction	Achieve at least 2 points for MRc1 Building Life-Cycle Impact Reduction	Owner to confirm if consultant will be engaged to perform an LCA and determine achievability with the 2-pt threshold for MRc1 Building Life-Cycle Impact Reduction.	Greystar	
1				RP Credit 1.4	Regional Priority, WEc2 Indoor Water Use Reduction	Achieve at least 4 points for WEc2 Indoor Water Use Reduction	Project team is targeting at least 40% water use reduction to meet regional priority requirements.	A10 / BR+A	

Affidavit

74 Middlesex Avenue – Sustainable Development

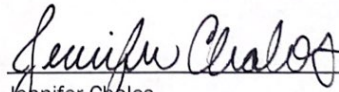
I, Jennifer Chalos, personally appeared before the undersigned notary public, and under oath or affirmation make the following statements:

- I am a LEED Accredited Professional with BD+C specialty, credential ID 11015706-AP-BD+C, currently employed by Atelier Ten.
- I confirm that I am the LEED Accredited Professional for 74 Middlesex Avenue located in Somerville, MA.
- I have been actively involved in 74 Middlesex Avenue and have coordinated with the other project team members, including but not limited to Greystar Real Estate Partners, Elkus Manfredi Architects, BR+A Consulting Engineers, Vanasse Hangen Brustlin, and Mikyoung Kim Design to develop the LEED v4 Core and Shell scorecard.
- To the best of my knowledge, 74 Middlesex Avenue is being planned and designed with the goal of being LEED Platinum certifiable.
- I declare that I have read the foregoing statements and that the facts stated therein are true and correct to the best of my knowledge, information, and belief.


LONDON
GLASGOW
EDINBURGH
NEW YORK
NEW HAVEN
SAN FRANCISCO
BANGKOK
SINGAPORE
MELBOURNE
SYDNEY

45 East 20th Street, 4th Floor
New York, New York 10003
T +1 (212) 254 4500
F +1 (212) 254 1259
newyork@atelierten.com
atelierten.com

DATED this the 24 day of June, 2021


Jennifer Chalos
Senior Environmental Designer

SWORN TO AND SUBSCRIBED before me, this the 24th day of June, 2021



NOTARY PUBLIC FOR THE STATE OF New York

MY COMMISSION EXPIRES June 24th 2021
Dec 28, 2023

DAVID SANTOS
Notary Public, State of New York
No. 01SA6334917
Qualified in New York County
Commission Expires Dec 28, 2023