



September 26, 2018

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John Dalzell, Senior Architect
Boston Planning and Development Agency
One City Hall Square, 9th Floor
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Subject: The Parkway Apartments Sustainable Design Refined

Dear Mr. Dalzell:

Since the BPDA Scoping Session on September 17, 2018, the Parkway Apartments Project team has assessed each potential point in the Leadership in Energy and Environmental Design (LEED) score card and identified additional credits that may be achievable and has added twelve new potential points to the maybe column. The refined LEED score card and sustainable design narrative, attached, includes additional details on how the Project will achieve each point being pursued, as well as a Preliminary Energy Analysis conducted by R. W. Sullivan Engineering.

We look forward to meeting with you to discuss the Project's sustainable design strategies.

ASSOCIATES

Richard M. Lampeter, INCE
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Sincerely,

EPSILON ASSOCIATES, INC.

A handwritten signature in black ink that reads "Talya Moked".

Talya Moked
Project Planner

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4.0 SUSTAINABLE DESIGN AND CLIMATE CHANGE RESILIENCE

4.1 Article 37 Compliance

The Project's approach is rooted in sustainable development and design, and the Project team anticipates incorporating many aspects of sustainability to ensure the longevity of the Project while reducing the overall ecological footprint of the building. Emphasis has been placed on urban connectivity, reduced carbon footprint, reduction of virgin material use, overall energy and water conservation, and occupant well-being, among other considerations. The Project is located in a suburban type setting with access to public transportation. The building will feature efficient exterior wall assemblies and performant U value fenestration, as well as a variety of sustainable materials, which will serve to increase efficiency and enhance the aesthetic design quality at the interior and exterior. The fenestration, coupled with nine foot ceiling heights will provide tenants with unique opportunities for daylight harvesting and views to the exterior. A preliminary energy analysis is included at the end of this section.

The Project will use the LEED BD+C for New Construction v4 rating system to demonstrate the Project's sustainability goals and compliance with Article 37 of the Zoning Code. The LEED rating system tracks the sustainable features of the Project by assigning points in the following categories: Location and Transportation (LT); Sustainable Sites (SS); Water Efficiency (WE); Energy & Atmosphere (EA); Materials and Resources (MR); Indoor Environmental Quality (IEQ); Innovation & Design (ID); and Regional Priority (RP). Currently, the Project's preliminary evaluation has identified 40 possible points, meeting Certified level, and will continue to evaluate these credits and the 20 additional credits that are identified as maybe achievable.

4.2 LEED Credit Narrative

The following is a detailed credit-by-credit analysis of the Project team's approach to achieving LEED certifiability. Points that are still being studied and marked as "maybe" on the LEED checklist are italicized below. A LEED checklist is included at the end of this section, and details the credits the Project anticipates achieving. This is a preliminary evaluation of the LEED checklists, and applicable credits may change as the building designs advance.

4.2.1 *Integrative Process (1 point)*

IP Integrative Process: Beginning in pre-design and continuing throughout the design phases, the Project team will identify and use opportunities to achieve synergies across disciplines and building systems. The analyses will inform the Proponent's Project requirements, basis of design, design documents, and construction documents.

4.2.2 Location and Transportation (6 points)

LT Surrounding Density and Diverse Uses: The Project site meets the criteria for Option 1 – Diverse Uses. The Project's main entrances are within a ½ mile walking distance to the main entrance of at least four existing uses.

LT Access to Quality Transit: The Project site is within ¼ mile walking distance of existing MBTA bus stops. The nearest bus stop is located approximately 2,000 feet to the northeast of the site.

LT Bicycle Facilities: The Project site is located within a 200-yard walking distance from a bicycle network that connects to at least ten diverse uses and a transit hub. Additionally, short-term bicycle storage for at least 2.5% of all peak visitors and one long-term (covered) bicycle storage space for each residential unit, exceeding the requirement of providing long-term bicycle storage for at least 5% of all regular building occupants.

LT Green Vehicles: The Project will designate 5% of all parking spaces used by the Project as preferred parking for green vehicles. Additionally, electrical vehicle supply equipment (EVSE) will be installed in 2% of all parking spaces used by the Project.

4.2.3 Sustainable Sites (5 points)

SS Prerequisite – Construction Activity Pollution Prevention: The construction documents will include a Soil Erosion and Sedimentation Control Plan to be developed in accordance with the EPA Construction General Permit of the NPDES. A Stormwater Pollution Prevention Plan (SWPPP) will also be developed for the building in accordance with the requirements for the U.S. EPA's National Pollutant Discharge Elimination System Construction General Permit. These documents will be used to document compliance with this prerequisite.

SS Site Assessment: The Project team will complete and document an assessment of the following information:

1. Topography – contours and sloping,
2. Hydrology – flood hazards and existing water bodies,
3. Climate – solar exposure and sun angles,
4. Vegetation – vegetation types and greenfield spaces,
5. Soils – soils delineation, prime farmland, and disturbed soils,
6. Human Use – enhanced views, availability of transportation, and future building potential, and
7. Human Health Effects – population assessment, physical fitness, and existing air pollution sources.

SS Open Space: More than 30% of the total Project area will be dedicated to outdoor space, and at least 25% of that space will be vegetated.

SS Heat Island Reduction: The Project will utilize high albedo materials for all hardscapes, including both nonroof and roof installations. All installed materials will meet LEED requirements for either initial or three-year Solar Reflectance Index values.

SS Light Pollution: The team will ensure that all exterior lighting fixtures are full cutoff and meet the LEED dark sky requirements. No up lighting will be utilized and fixtures will be dimmed at night to keep the site safe while minimizing light pollution.

4.2.4 *Water Efficiency (5 points)*

WE Outdoor Water Use Reduction (prerequisite): The Project will reduce landscape water demand by at least 30% from the calculated baseline for the site's peak watering month. Reductions will be achieved through plant species selection and irrigation system efficiency, as calculated by the Environmental Protection Agency (EPA) WaterSense Water Budget Tool.

WE Indoor Water Use Reduction (prerequisite): Flush and flow fixtures specified for the Project will enable the building to exceed the aggregate water consumption reduction requirement of 20% and will be WaterSense labeled, as applicable. Additionally, appliance and process water use will meet applicable requirements

WE Building-level Water Metering (prerequisite): Permanent whole building water use meters will be installed on the Project to measure potable water use within the building and from site irrigation. Monthly and annual summaries will be uploaded to Energy Star Portfolio Manager.

WE Outdoor Water Use Reduction: The Project will reduce landscape water demand by at least 50% from the calculated baseline for the site's peak watering month. Reductions will be achieved through plant species selection and irrigation system efficiency, as calculated by the Environmental Protection Agency (EPA) WaterSense Water Budget Tool.

WE Indoor Water Use: The Project will reduce demand for potable water through high efficiency fixtures – this design will surpass the prerequisite requirement for 20% reduction with a goal of 35% reduction.

WE Water Metering: The Project will install permanent water meters for two or more water subsystems such as irrigation, domestic hot water or indoor plumbing fixtures.

4.2.5 *Energy and Atmosphere (5 points)*

EA Fundamental Commissioning and Verification (Prerequisite): The team will include an experienced Commissioning (Cx) Agent. This person will be hired before the end of the design development phase to provide review services for the project Basis of Design and Owner's Project Requirements, as well as a thorough review of both the Design

Development and Construction Documents plan and specification set, observation of all start-up testing and balancing procedures, and confirmation of installation and operation according to the design parameters.

EA Minimum Energy Performance (Prerequisite): Through a Whole Building Energy Simulation, the Proponent will demonstrate at least a 5% improvement in the proposed building performance rating, compared with the baseline building performance rating. The baseline building performance rating will be calculated according to Appendix G of ASHRAE 90.1-2010 using a computer simulation model for the whole building project.

EA Building-Level Energy Metering (Prerequisite): Energy meters will be installed to measure total building energy consumption (electricity, natural gas, chilled water, steam, fuel oil, propane, biomass).

EA Fundamental Refrigerant Management (Prerequisite): It is the intent of this Project not to use any CFC-based refrigerants in the building's heating, ventilating, air conditioning, or refrigeration equipment.

EA Optimize Energy Performance: The Project will strive to optimize energy performance and realize energy cost savings of 14.9% compared with ASHRAE 90.1-2010. Energy conservation measures will be determined via an integrative approach investigating the overlapping of architectural and engineering systems to reduce energy cost. Energy conservation measures are expected to include green roofs, reflective roofs, efficient lighting and HVAC systems, heat recovery systems, and enhanced glazing and insulation.

4.2.6 *Materials and Resources (5 points)*

MR Storage and Collection of Recyclables (Prerequisite): An easily accessible area will be provided for the collection and storage of materials for recycling for the entire building. Materials will include paper, corrugated cardboard, glass, plastics, and metals. Appropriate measures will be taken for the safe collection, storage, and disposal of two of the following: batteries, mercury-containing lamps, and electronic waste

MR Construction and Demolition Waste Management Planning (Prerequisite): The construction team will institute a Construction Waste Management Plan, which will establish waste diversion goals for five materials.

MR Building Product Disclosure and Optimization – Environmental Product Declarations: The Project team will document the use of at least 20 different permanently installed products, sourced from at least five different manufacturers, that include confirmed environmental product declaration documents.

MR Building Product Disclosure and Optimization – Sourcing of Raw Materials: The Project team will document the use of at least 20 different permanently installed products, sourced from at least five different manufacturers, that include third-party corporate sustainability reports with information on extraction operations.

MR Building Product Disclosure and Optimization – Material Ingredients: The Project team will document the use of at least 20 different permanently installed products, sourced from at least five different manufacturers, that include manufacturer’s inventory of all contents, Health Product Declarations, and/or Cradle-to-Cradle certification.

MR Construction and Demolition Waste Management: The Project team will divert at least 75 percent of waste from at least four material streams.

4.2.7 *Indoor Environmental Quality (7 points)*

IEQ Minimum Indoor Air Quality Performance (Prerequisite): The team will ensure that all ventilation systems meet the minimum requirements of Sections 4 through 7 of the ASHRAE 62.1-2007 standard for Acceptable Indoor Air Quality.

IEQ Environmental Tobacco Smoke Control (Prerequisite): Smoking will be prohibited inside the building and within 25-feet of all entries, outdoor air intakes, and operable windows; these prohibitions will be included in all lease agreements and/or condominium documents, will be displayed via on-site signage.

IEQ Enhanced Indoor Air Quality Strategies: Permanent entryway systems at least ten feet in length will be installed in the primary direction of travel, to capture dirt and particulates entering the building at regularly used exterior entrances. Additionally, spaces where air-quality hazards might be stored (janitor’s closets, print rooms, etc.) will have separate exhaust, negative pressurization, provide self-closing doors, and either floor-to-deck partitions or a hard-lid ceiling. Outdoor air ventilation systems will use MERV 13 or higher filtration media.

IEQ Low-Emitting Materials: The Project team will specify low-emitting materials for paints, coatings, flooring, adhesives, and sealants.

IEQ Construction Indoor Air Quality (IAQ) Management Plan: The Proponent will develop and implement an IAQ management plan for the construction and pre-occupancy phase of the building.

IEQ Thermal Comfort Controls: All HVAC systems will be designed in compliance with ASHRAE 55-2010 (with errata). Thermal comfort controls will be provided for each residential unit, with group thermal comfort controls for all shared multi-occupant spaces.

IEW Interior Lighting: The Project will provide individual lighting controls for at least 90% of individual occupant spaces, and all shared spaces will include controls for adjustment per group needs.

IEQ Quality Views: The Project team will seek to maximize the views available to occupants in all regularly occupied spaces. At least 75% of the applicable floor area will achieve a direct line of sight to the outdoors.

4.2.8 *Innovation and Design (6 points)*

The Project team anticipates earning six Innovation and Design points as the Project team includes at least one LEED AP. One innovation credit will be achieved through exemplary performance for Quality Views. Additional potential innovation credits include: Walkable Project Site, Parksmart Measures, Housing Types and Affordability, Design for Active Occupants, Building Education, Low-Mercury Lighting, and Integrated Pest Management.

4.2.9 *Regional Priority Credits*

The four points available in this category are contingent upon meeting certain thresholds for credits in other categories, as determined by the USGBC. The Project does not currently anticipate achieving any regional priority credits.

4.3 Climate Change Preparedness

4.3.1 *Introduction*

Projects subject to Article 80B, Large Project Review, are required to complete the Climate Change Preparedness Checklist. Climate change conditions considered by the Project team include sea-level rise, higher maximum and mean temperatures, more frequent and longer extreme heat events, more frequent and longer droughts, more severe freezing rain and heavy rainfall events, and increased wind gusts.

A copy of the Climate Change Checklist is included in Appendix E. Given the preliminary level of design, the responses are also preliminary and may be updated as the Project design progresses.

4.3.2 *Extreme Heat Events*

The *Climate Ready Boston* report predicts that in Boston, there may be between 25 to 90 days with temperatures over 90 degrees by 2070, compared to an average of 11 days per year over 90 degrees between 1971 to 2000. The Project design will include measures to adapt to these conditions, including specifying low energy equipment, appliances, programmable thermostats, and low energy lighting. The Project will reduce the urban heat island effect by installing reflective roof materials, and by having over 40% of the total site area be landscaped.

4.3.3 *Sea Level Rise and Future Storms*

The Project site is located in close proximity to the Charles River, and a portion of the site is located within the 100-year flood zone. According to Climate Ready Boston, by 2030 sea level may be as much as eight inches higher than it was in 2000, and could be as high as seven feet higher by 2100. As described in “Climate Change and Extreme Weather Vulnerability Assessments and Adaptation Options for the Central Artery” by MassDOT (MassDOT Report), “one of the challenges presented by the wide range of SLR projections is the inability to assign likelihood to any particular [SLR] scenario.”¹ To be conservative, in the year 2070, SLR could be as high as approximately four feet.

The Project will take measures to minimize the impact of potential flooding at the site, including the following:

- ◆ Elevating the first floor of the buildings to be approximately two feet higher than the 100-year floodplain;
- ◆ Critical systems, electric, cable, and other utility services located below design flood elevation, if any, may be dry flood proofed; and
- ◆ To the extent feasible, critical systems will be located at two feet above base flood elevation.

4.3.4 *Drought Conditions*

Although more intense rain storms are predicted, extended periods of drought are also predicted due to climate change. Under the high emissions scenario, the occurrence of droughts lasting one to three months could go up by as much as 75% over existing conditions by the end of the century. To minimize the Project’s susceptibility to drought conditions, the landscape design is anticipated to incorporate native and adaptive plant materials and high efficiency irrigation systems will be installed. Aeration fixtures and appliances will be chosen for water conservation qualities, conserving potable water supplies.

¹ Massachusetts Department of Transportation, et al. “MassDOT-FHWA Pilot Project Report: Climate Change and Extreme Weather Vulnerability Assessments and Adaptation Options for the Central Artery.” November 2015.



LEED v4 for BD+C: New Construction and Major Renovation

Project Checklist

Project Name: The Parkway Apartments 1507 VFW Parkway West Roxbury

Date:

Y ? N

1			Credit	Integrative Process	1
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6	2	24	Location and Transportation		16
		16	Credit	LEED for Neighborhood Development Location	16
		1	Credit	Sensitive Land Protection	1
		2	Credit	High Priority Site	2
1	1	3	Credit	Surrounding Density and Diverse Uses	5
3		2	Credit	Access to Quality Transit	5
1			Credit	Bicycle Facilities	1
	1		Credit	Reduced Parking Footprint	1
1			Credit	Green Vehicles	1

5	2	3	Sustainable Sites		10
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
	1	1	Credit	Site Development - Protect or Restore Habitat	2
1			Credit	Open Space	1
	1	2	Credit	Rainwater Management	3
2			Credit	Heat Island Reduction	2
1			Credit	Light Pollution Reduction	1

5	2	4	Water Efficiency		11
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
1	1		Credit	Outdoor Water Use Reduction	2
3	1	2	Credit	Indoor Water Use Reduction	6
		2	Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1

5	6	22	Energy and Atmosphere		33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
		6	Credit	Enhanced Commissioning	6
5	3	10	Credit	Optimize Energy Performance	18
		1	Credit	Advanced Energy Metering	1
		2	Credit	Demand Response	2
		3	Credit	Renewable Energy Production	3
	1		Credit	Enhanced Refrigerant Management	1
	2		Credit	Green Power and Carbon Offsets	2

5	4	4	Materials and Resources		13
Y			Prereq	Storage and Collection of Recyclables	Required
Y			Prereq	Construction and Demolition Waste Management Planning	Required
	1	4	Credit	Building Life-Cycle Impact Reduction	5
1	1		Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2
1	1		Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2
1	1		Credit	Building Product Disclosure and Optimization - Material Ingredients	2
2			Credit	Construction and Demolition Waste Management	2

7	2	7	Indoor Environmental Quality		16
Y			Prereq	Minimum Indoor Air Quality Performance	Required
Y			Prereq	Environmental Tobacco Smoke Control	Required
1		1	Credit	Enhanced Indoor Air Quality Strategies	2
2	1		Credit	Low-Emitting Materials	3
1			Credit	Construction Indoor Air Quality Management Plan	1
		2	Credit	Indoor Air Quality Assessment	2
1			Credit	Thermal Comfort	1
1		1	Credit	Interior Lighting	2
		3	Credit	Daylight	3
1			Credit	Quality Views	1
	1		Credit	Acoustic Performance	1

6	0	0	Innovation		6
5			Credit	Innovation	5
1			Credit	LEED Accredited Professional	1

0	2	2	Regional Priority		4
	1		Credit	Regional Priority: Specific Credit	1
	1		Credit	Regional Priority: Specific Credit	1
		1	Credit	Regional Priority: Specific Credit	1
		1	Credit	Regional Priority: Specific Credit	1

40	20	66	TOTALS	Possible Points:	110
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Certified: 40 to 49 points, Silver: 50 to 59 points, Gold: 60 to 79 points, Platinum: 80 to 110



Building Component	Base Case (ASHRAE 90.1-2010 App. G)	Proposed Design
Gross Square Footage	351,000	351,000
Roof Assembly	R-30	R-50
Wall Assembly	R-21	R-21
Windows & Glazing	Metal Windows Fixed: U-0.42 Non-Metal Frame Windows: U-0.32 SHGC-0.40	U-0.31 SHGC-0.32
Window-to-Wall Ratio	< 40%	< 40%
Temperature Setpoints	Cooling: 75°F Heating: 70°F	Cooling: 75°F Heating: 70°F
Residential HVAC System	PTACs with Hot Water Heating and DX Cooling	Aquatherm Fan-coil units with Hot Water Heating and DX Cooling
Residential Heating Efficiency	82% eff Boiler	95% eff Boiler
Residential Cooling Efficiency	9.5 EER (13 SEER)	12.5 EER (16 SEER)
Domestic Hot Water	80% eff Natural Gas Storage Tank	95% eff Combi Boiler
Lighting LPD (Building Area Method)	0.60 W/sf	0.51 W/sf
Corridor HVAC System	PTACs with Hot Water Heating and DX Cooling	RTUs with Gas-Fired Furnace and DX Cooling w/ Economizer
Corridor Heating Efficiency	82% eff Boiler	80% eff Furnace
Corridor Cooling Efficiency	9.5 EER (13 SEER)	12.5 EER (16 SEER)
Amenity HVAC System	PTACs with Hot Water Heating and DX Cooling	Gas-Fired Furnace and Split DX Cooling
Amenity Heating Efficiency	82% eff Boiler	95% eff Furnace
Amenity Cooling Efficiency	9.5 EER (13 SEER)	12.5 EER (16 SEER)
Utility Rates	\$0.16/kWh \$1.00/therm	\$0.16/kWh \$1.00/therm
Whole Building Energy Model Results		
Building Electric Energy Use Intensity (kBtu/sf yr)	29	25
Building Gas Energy Use (kBtu/sf yr)	21	17
Total Building Energy Use Intensity (kBtu/sf yr)	50	42
Total Building Energy Cost Intensity (\$/sf yr)	\$ 1.57	\$ 1.34
% Savings Over LEED Baseline (Energy Cost)		14.9%
Points Awarded Under EAc1		5

Notes:

- (1) Wall and roof insulation values are "equivalent" R-values and include inside and outside film effects
- (2) Window U-value and SHGC are for fenestration total assembly
- (3) Greater LPD reduction can be achieved by limiting dwelling unit lighting on switched receptacle circuits