



GE Headquarters Project

Construction Green Building Report
Revised Article 37 Report for G2

5 NECCO STREET
BOSTON, MA 02210



SUBMITTED TO
BOSTON PLANNING &
DEVELOPMENT AGENCY

PROPONENT
General Electric & Natioanl
Development / Alexandria Real
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IN ASSOCIATION WITH
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DATE
October 19, 2019

Contents

Introduction to the Project2

LEED Project Scope 3

Integrative Process LEED Strategy4

Location and Transportation LEED Strategy4

Sustainable Sites LEED Strategy 7

Water Efficiency LEED Strategy.....9

Energy and Atmosphere LEED Strategy11

Innovation LEED Strategy18

Brick Buildings LEED Scorecard19

Introduction to the Project

This report addresses the climate resiliency and related measures associated with the rehabilitation of the buildings formerly known as 5 and 6 Necco Court, which have been joined by a connective addition and are now known as 5 Necco Street. The rehabilitation work has been undertaken by the General Electric Company (“GE”), as the tenant under an office space lease with ARE-MA Region 71 Holding, LLC (“Owner”), which acquired the building in May 2019. The rehabilitation work undertaken under GE’s auspices (the “Project”) has been substantially completed as to its space (i.e., Floors 2-6 of 5 Necco Street).

The Project, as described here, comprises Phase 1 of a larger, two-phase project that will include the construction by the Owner on 15 Necco Street, currently a vacant lot used for construction staging, of a new building multi-tenant office/lab use with facilities of public accommodation on the ground floor (“New Building”). This report addresses only the Project and not the New Building. Nor does this report address the fit-out by other tenants of the ground floor space at 5 Necco Street, which will be undertaken by others under the stewardship of the Owner.

LEED Project Scope

5 Necco Court will provide approximately 97,100 square feet of gross floor area of rehabilitated space. The building has been vacant for decades and parts of the building were utilized as construction field offices during the Central Artery/Tunnel Project (the "Big Dig") construction project between 1991 and 2007. Since the conclusion of that project, the building has remained largely vacant with minimal routine maintenance. The Project connected two brick buildings with a glass enclosed connector containing a staircase and collaborative floor space unifying the structure into one building. The roof of the building will feature a terrace with vegetated/green roof area for building tenants to collaborate and relax. The upper levels of the building are repurposed as modern workspace and are leased to General Electric to serve as the company's world headquarters.

The project team is currently targeting a total of 50 out of a possible 110 points – enough for USGBC LEED Certification under the LEED BD+C New Construction and Major Renovation v4 Edition. An additional 16 points are potential alternates with the campus development undergoing study to determine the project's eligibility and the feasibility of attainment.

Final inclusion of these strategies will be dependent on the outcome of calculations, material procurement, and project team decisions. Please refer to the project checklist located at the end of this document for specific point allocations.

Integrative Process LEED Strategy

In an effort to support high-performance and enable cost-effective project outcomes through an early analysis of the interrelationships among systems, the project team has committed itself to a highly collaborative, integrated process that will achieve synergies across disciplines. Early in the design process, energy and water targets were set, supported by an aspirational energy model and water balance calculations. Additionally, extensive studies of lighting levels, site conditions, existing infrastructure, and exterior envelope options have all been performed, contributing to this credit.

Location and Transportation LEED Strategy

The project team identified 13 achievable points of the 16 possible points within the Location and Transportation category. The 15 points within this category are being achieved in large part due to the selection of a site in an amenity-dense urban environment which provides alternative transportation options with proximity to multiple nodes of mass transit.

A point-by-point breakdown of all credits currently being “Pursued” by the project team are as follows:

LT Credit 2 – Sensitive Land Protection (1 Point)

Master Site Credit

The Project consists of rehabilitating two underused brick structures that were last used as part of the New England Confectionary Company complex on the site.

LT Credit 3 – High Priority Site (1 Point)

The Project is located on an infill location in a historic district (Fort Point Channel Historic District) and therefore meets the Option 1 credit requirements.

LT Credit 4 – Surround Density and Diverse Uses (5 Points)

Master Site Credit

The project team has calculated – excluding Fort Point Channel – the combined density of surrounding area is above the 35,000 square feet per acre threshold, yielding 3 possible points. Similarly, within a 0.5 mile walk of the New Building, there are more than 8 unique

uses including retail, residential, office, and cultural attractions, yielding another 2 of 2 possible points.

LT Credit 5 – Access to Quality Transit (5 Points)

Master Site Credit

The Project is easily accessible by a variety of public transit options that provide numerous connections to most other MBTA public transit services, allowing the Project Site to be reached by bus, subway and commuter rail from many locations within the City of Boston and the surrounding suburbs. The Massachusetts Bay Transportation Authority (“MBTA”) currently provides local and express bus, Red Line, Commuter Rail, and Silver Line service within a quarter mile of the Project Site.

Nearby South Station provides access not only to the MBTA’s Red Line and Silver Line but also Amtrak Northeast Corridor service and a connection to Logan International Airport.

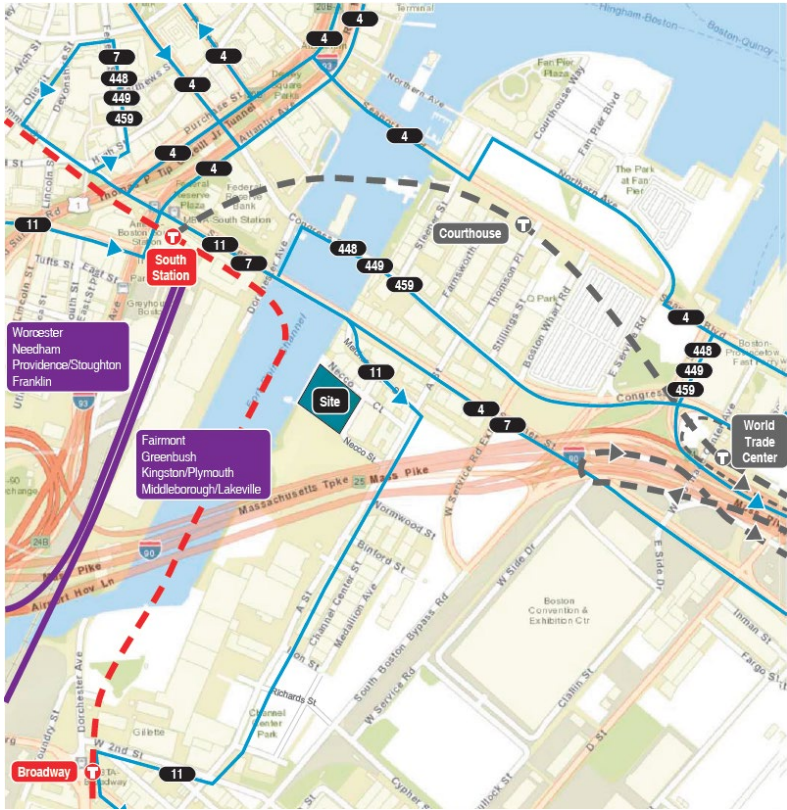


Figure 1 - Area Mass Transit Access Points

LT Credit 7 – Reduced Parking Footprint (1 Point)

Master Site Credit

Although the adjacent New Building has a below-grade parking facility, only 30 spaces will be provided, encouraging the use of non-automobile modes of commuting. This represents an exceedance of Case 2 criteria by 98%. There will be no parking facilities underneath the Brick Buildings.

Sustainable Sites LEED Strategy

The project team has identified 1 achievable point of the 10 possible within the Sustainable Sites category. The project team will continue to track and evaluate the feasible credits which relate to rainwater treatment and retention and light pollution reduction.

The 8 credits within Sustainable Sites are being achieved through a combination of strategies including rehabilitating the two existing Brick Buildings, restoring habitat, selecting a site in an amenity-dense urban environment with a multitude of alternative transportation options, maximizing open space (by employing a roof garden and integrating pedestrian oriented hardscape), and by minimizing the heat island effect of roofing materials.

A point-by-point breakdown of all credits currently being “Pursued” by the project team are as follows:

SS Prerequisite 1 – Construction Activity Pollution Prevention (Satisfied)

The project team developed a Stormwater Pollution Prevention Plan (SWPPP) for the project in compliance with the provisions of the Clean Water Act and its amendments; this compliance acknowledges that operators of large and small construction activities must apply for coverage under the terms of the National Pollutant Discharge Elimination System (NPDES) general permit. The U.S. Environmental Protection Agency (EPA) has issued the Construction General Permit (CGP) to authorize the discharge of stormwater associated with construction activities under the NPDES. The goal of the CGP is to reduce or eliminate stormwater pollution from construction activities by requiring the planning and implementation of a SWPPP to protect the water quality of receiving surface water bodies. The SWPPP identifies potential sources of pollution from the construction site that may affect the quality of storm water discharges, describes practices to be used to reduce such pollutants, and assures compliance with the terms and conditions of the CGP.

Throughout the construction process, the contractor has maintained the preventative measures prescribed with the SWPPP, and documenting and correcting any occurrences that are not in compliance. Measures are identified within their SWPPP document, communicated through contractor training and audits, and documented via photos and compliance checklists throughout the life of the project.

SS Credit 1 – Site Assessment (1 Point)

Master Site Credit

The intent of this credit is to assess site conditions before design in order to evaluate sustainable options and inform related decisions about site design. This is part of the integrative design process being employed on this project; the information required for

the credit documentation that was generated pre-design is being packaged for the LEED certification.

Water Efficiency LEED Strategy

The project team is able to identify 3 points that are achievable in current design out of an 11 possible points within the Water Efficiency category. The Brick Buildings incorporates a wide variety of elements that drive water efficiency including using roof runoff as site irrigation and to flush toilets, high-efficiency flush/flow fixtures, and smart metering of all water subsystems.

A point-by-point breakdown of all credits currently being “Pursued” by the project team are as follows:

WE Prerequisite 1 – Outdoor Water Use Reduction (Satisfied)

Master Site Credit

The project team is pursuing Option 2. The water budget developed by the irrigation designer shows an 50% reduction from the baseline in potable water usage for the landscape is achievable.

WE Prerequisite 2 – Indoor Water Use Reduction (Satisfied)

As part of the water use reduction prerequisite, the project team has specified low-flow toilets, urinals, and lavatories as part of the overall effort to increase water efficiency within the building and reduce the burden on municipal water supply and wastewater systems. Through the implementation of these water-saving fixtures and a water reclaim system, the project team anticipates satisfying this prerequisite and achieving an approximately 25% reduction in potable water use.

WE Prerequisite 3 – Building Level Water Metering (Satisfied)

The project team has committed to building-level water metering in addition to metering of all water sub-systems.

WE Credit 1 – Outdoor Water Use Reduction (1 Point)

Master Site Credit

The project team intends to pursue Option 2 for this credit. Through plant selection, irrigation system design and rainwater harvesting, the project will be able to satisfy the prerequisite requirement and reduce the landscape’s potable water usable by approximately 50% from the baseline.

WE Credit 3 – Cooling Tower Water Use (ACP) (2 Points)

Two points can be achieved for this credit through an Alternative Compliance Path. The ASHRAE 90.1 baseline system for this building includes a cooling tower, but the building design does not include a cooling tower, district cooling, or in any way use evaporative cooling.

Energy and Atmosphere LEED Strategy

The current design of the Brick Buildings satisfies 13 points out of the total 33 points available for the Energy and Atmosphere category. The Brick Buildings will feature management of energy systems through an automated central Building Management System which will optimize and analyze performance of mechanical and utility systems.

A point-by-point breakdown of all credits currently being “Pursued” by the project team are as follows:

EA Prerequisite 1 - Fundamental Commissioning and Verification (Satisfied)

GE has engaged AECOM in the capacity of the Brick Buildings’ Commissioning Agent which will develop the commissioning plan and review all related drawings.

EA Prerequisite 2 – Minimum Energy Performance (Satisfied)

Through a number of energy-savings strategies, the current energy model predicts an 18% energy cost savings versus baseline.

EA Prerequisite 3 – Building Level Energy Monitoring (Satisfied)

The Brick Buildings will have building-level energy monitoring capable of tracking total building energy consumption, including electricity, natural gas, chilled water, steam, fuel oil, propane, biomass, etc.

EA Prerequisite 4 – Fundamental Refrigerant Management (Satisfied)

Master Site Credit

All refrigerants in the Brick Buildings’ mechanical systems will be non-CFC refrigerants.

EA Credit 1 – Enhanced Commissioning (5 Points)

GE has engaged AECOM as the commissioning agent. The Brick Buildings are pursuing enhanced commissioning including envelope commissioning. Monitoring based commissioning is under consideration and will be decided upon once operations are finalized.

EA Credit 2 – Optimizing Energy Performance (7 Points)

The current energy model for the Brick Buildings predicts 18% energy cost savings versus baseline energy usage, yielding 7 points.

EA Credit 6 – Enhanced Refrigerant management (1 Point)

The refrigerants for the project have been selected with low global warming potential to meet the requirements of the Enhanced Refrigerant Management credit.

Materials and Resources LEED Strategy

Out of a possible 13 points in the Materials and Resources category, the project team is pursuing 9 points through the specific selection of building materials and products.

A point-by-point breakdown of all credits currently being “Pursued” by the project team are as follows:

MR Prerequisite 1 – Storage and Collection of Recyclables (Satisfied)

Master Site Credit

Current design of the Brick Buildings includes a recycling room in the lower level. The recycling plan for both buildings still needs to be documented and formalized, but will be consistent with GE’s corporate policy on recycling.

MR Prerequisite 2 – Construction and Demolition Waste Management Planning (Satisfied)

The project team has developed and implemented a construction and demolition waste management plan in conjunction with the contractor, who will detail all major waste streams generated, including disposal and diversion rates.

MR Building Life-Cycle Impact Reduction (5 Points)

The existing buildings are eligible for this credit under either Option 1 – Historic Building Reuse or Option 2 – Renovation of an Abandoned or Blighted building and will achieve 5 points.

MR Credit 2 – Building Product Disclosure and Optimization – EPD’s (1 Point)

The project team is meeting the requirements of this credit via Option 1 through the use of 20 different permanently installed products sourced from at least five different manufacturers that have industry-wide or product-specific Environmental Product Declarations.

MR Credit 4 – Building Product Disclosure and Optimization – Material Ingredients (1 Point)

The project team is meeting the requirements of this credit via Option 1 through the use of 20 different permanently installed products sourced from at least five different manufacturers that have material ingredient disclosure up to 0.1% or 1000 ppm.

MR Credit 5 – Construction and Demolition Waste Management **(2 Points)**

The project team will pursue Option 1, Path 2 and has diverted over 75% of total construction and demolition materials, including four different material streams. This will be achieved by diverting waste from landfills by finding multiple alternatives for end uses of the waste, namely recycling, reuse on site, donation for reuse on another site, or resale.

Indoor Environmental Quality LEED Strategy

The project team anticipates earning 5 out of a possible 16 points related to the implementation of indoor environmental quality measures. These measures include (but are not limited to): monitoring outdoor air delivery to interior spaces to counter high concentrations of indoor air pollutants; increasing ventilation rates to spaces throughout the building; managing indoor air quality during construction for the construction team as well as future occupants; and, specifying, selecting, and installing materials that contain low amounts of volatile organic compounds (VOCs), including those related to adhesives, sealants, paints, coatings, and flooring systems, as well as confirming that there are no composite wood products containing added urea formaldehyde.

A point-by-point breakdown of all credits currently being “Pursued” by the project team are as follows:

EQ Prerequisite 1 – Minimum Indoor Air Quality Performance (Satisfied)

This prerequisite establishes a baseline for providing a minimum amount of outdoor air to buildings in order to maintain good indoor air quality and keep occupants comfortable and healthy. Overall, the intent is to establish minimum indoor air quality performance to enhance indoor air quality in buildings, thus contributing to the comfort and well-being of the occupants.

Current design includes mechanical systems that will exceed the ventilation requirements of ASHRAE 62.1-2010. The Brick Buildings’ design also provides direct outdoor airflow measurement device capable of measuring the minimum outdoor air intake flow.

EQ Prerequisite 2 – Environmental Tobacco Smoke Control (Satisfied)

Master Site Credit

The entire project site will be a smoke-free campus per the Proponent’s corporate policy. Signage will be posted as required.

EQ Credit 1 – Enhanced Indoor Air Quality Strategies (2 Points)

The intent of this credit is to promote occupants’ comfort, well-being, and productivity by improving indoor air quality. The proposed design will achieve up to two points for this credit. For Option 1 (1 point), all entrances are designed with particulate capture systems and spaces with hazardous chemicals are designed with self-closing doors and deck-to-deck partitions. Exhaust systems for cross-contamination prevention and MERV 13 filtration are included in the design as add-

alternates. For Option 2 (1 additional point), the current design meets Requirement B for mechanically ventilated spaces by exceeding outside air by ASHRAE 62.1 by 30%. The HVAC design team is also exploring compliance with requirement D, Additional Source Control and Monitoring.

EQ Credit 3 – Construction Indoor Air Quality Management Plan (1 Point)

In order to reduce indoor air quality (IAQ) problems resulting from construction and promote the comfort and well-being of construction workers and building occupants, the project team has developed and implemented an IAQ management plan for the construction and preoccupancy phases of the building. The requirements of the IAQ plan are as follows:

- During construction, meet or exceed the recommended control measures of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 2nd Edition 2007, ANSI/ SMACNA 008-2008 (Chapter 3).
- Protect stored on-site and installed absorptive materials from moisture damage.
- It is expected that the permanently installed air handlers will be used during construction, and filtration media will be used at each return air grille and must be replaced immediately prior to occupancy as well as the main filters in the Air Handling Unit.

The SMACNA guidelines cover the following general areas: HVAC Protection, Source Control, Pathway Interruption, Housekeeping, and Scheduling. Also, in addition to the SMACNA requirements, the project requires the construction team to protect absorptive material from moisture. This includes any absorptive materials, like drywall, carpet, and ceiling tiles. The team is required to take pictures of the protective measures throughout the construction process for documentation.

The Indoor Air Quality Management Plan has been coordinated with the subcontractors will be communicated two ways: via attachment to their contract, as well as content within the orientation training that is required for each subcontractor employee. Daily inspections are conducted to ensure compliance with the Plan and documented with photos.

EQ Credit 5 – Thermal Comfort (1 Point)

The intent of the Thermal Comfort credit is to provide a comfortable thermal environment that promotes occupant productivity and well-being. This credit requires that HVAC designs meet the requirements of ASHRAE Standard 55-2010, which deals with thermal comfort of building occupants. Specifically, ASHRAE 55

requires project teams to address air temperature, radiant temperature, humidity, and air speed.

Thermal comfort will be maintained throughout the building by floor by floor recirculating air handling units (AHUs) with chilled water coils to supply air to a medium pressure duct distribution loop. Fan powered boxes and VAV terminal boxes will be served from this medium pressure loop. Boxes serving perimeter zones will be provided with hot water reheat coils. Local thermostats will be provided at each zone. Mechanical ventilation is provided to the floor by floor air handling units via 100% outside air energy recovery units (ERUs) via a central riser with an outside air VAV terminal box that discharges into the mechanical room.

The energy recovery unit and each outside air VAV terminal box have the capability of modulating the outside air flow to the building and each floor between 40% and 100% of required capacity based on carbon dioxide levels throughout the building and on each floor. Each floor by floor air handling unit has the capability of modulating the supply air flow to each floor between 30% and 100%. Relative humidity is maintained primarily by the chilled water coils in the floor by floor air handling units and energy recovery unit. The centrally supplied tempered, de-humidified and filtered mechanical ventilation and recirculated air provides a continuous airflow rate to each space.

The systems sizes were calculated by using Carrier HAP software which identifies local environmental conditions, envelope thermal properties, occupancy, lighting, and receptacle loads, and system types.

EQ Credit 6 – Interior Lighting (1 Point)

Lighting Systems will be designed to have occupant level control with dimmers for all shared spaces and at least 50% of individual workstations.

Innovation LEED Strategy

The project team has established numerous strategies for acquiring the 5 out of 6 points in the Innovation category associated with both exemplary performance of some of the credits in other categories, as well as innovative ways to address sustainability not covered by existing credits in the rating system.

The project will meet the requirements of the pilot credit for Assessment and Planning for Resilience through the Boston planning requirements. It achieves exemplary performance in the Location & Transportation credits LTc5 Access to Quality Transit and LTc7 Reduced Parking Footprint.

The project will also have information on the sustainability strategies available to the occupants and visitors of the project through a Green Building Education program.

Additionally, the project will earn 1 of the 6 points through the inclusion of a LEED Accredited Professional on the core project team.

Brick Buildings LEED Scorecard

LEED Project Numbers:

- GE Headquarters Project – Master Site 1000074753
- GE Headquarters Project - G3 1000074928
- GE Headquarters Project - G2 1000074927

50 16 41 Total Project Score **Possible Points 110**

Certified: 40 to 49 points Silver: 50 to 59 points Gold: 60 to 79 points Platinum: 80 to 110 points

1			Integrative Process			Possible Points	1
P	A	N					
1			c1	Integrative Process		1	

13			2			1			Location and Transportation			Possible Points	16
P	A	N											
			N/A	c1	LEED for Neighborhood Development location		16						
1				c2	Sensitive Land Protection		1						
1			1	c3	High Priority Site		2						
5				c4	Surrounding Density and Diverse Uses		5						
5				c5	Access to Quality Transit		5						
			1	c6	Bicycle Facilities		1						
1				c7	Reduced Parking Footprint		1						
			1	c8	Green Vehicles		1						

1			7			2			Sustainable Sites			Possible Points	10
P	A	N											
Y			Prereq	Construction Activity Pollution Prevention		Req'd							
1			c1	Site Assessment		1							
			1	c2	Site Development - Protect or Restore Habitat		2						
			1	c3	Open Space		1						
			2	c4	Rainwater Management		3						
			2	c5	Heat Island Reduction		2						
			1	c6	Light Pollution Reduction		1						

3			1			7			Water Efficiency			Possible Points	11
P	A	N											
Y			Prereq	Outdoor Water Use Reduction		Req'd							
Y			Prereq	Indoor Water Use Reduction		Req'd							
Y			Prereq	Building Level Water Metering		Req'd							
1			1	c1	Outdoor Water Use Reduction		2						
			6	c2	Indoor Water Use Reduction		6						
2				c3	Cooling Tower Water Use (ACP)		2						
			1	c4	Water Metering		1						

13			3			17			Energy and Atmosphere			Possible Points	33
P	A	N											
Y			Prereq	Fundamental Commissioning and Verification		Req'd							
Y			Prereq	Minimum Energy Performance - 5% better than ASHRAE 90.1-2010		Req'd							
Y			Prereq	Building Level Energy Metering		Req'd							
Y			Prereq	Fundamental Refrigerant Management		Req'd							
5	1		c1	Enhanced Commissioning		6							
7			11	c2	Optimize Energy Performance		18						
			1	c3	Advanced Energy Metering		1						
			2	c4	Demand Response		2						
			3	c5	Renewable Energy Production		3						
1				c6	Enhanced Refrigerant Management		1						
			2	c7	Green Power and Carbon Offsets		2						

9			4			Materials and Resources			Possible Points	13
P	A	N								
Y			Prereq	Storage and Collection of Recyclables		Req'd				
Y			Prereq	Construction and Demolition Waste Management Planning		Req'd				
5			c1	Building Life-Cycle Impact Reduction		5				
1			1	c2	Building Product Disclosure and Optimization - EPDs		2			
			2	c3	Building Product Disclosure and Optimization - Raw Sourcing		2			
1			1	c4	Building Product Disclosure and Optimization - Material Ingredients		2			
2				c5	Construction and Demolition Waste Management		2			

5			1			10			Indoor Environmental Quality			Possible Points	16
P	A	N											
Y			Prereq	Minimum Indoor Air Quality Performance		Req'd							
Y			Prereq	Environmental Tobacco Smoke Control		Req'd							
2			c1	Enhanced Indoor Air Quality Strategies		2							
			1	2	c2	Low-Emitting Materials		3					
1				c3	Construction Indoor Air Quality Management Plan		1						
			2	c4	Indoor Air Quality Assessment		2						
1				c5	Thermal Comfort		1						
1			1	c6	Interior Lighting		2						
			3	c7	Daylight		3						
			1	c8	Quality Views		1						
			1	c9	Acoustic Performance		1						

5			1			Innovation			Possible Points	6
P	A	N								
1			c1.1	ID: Pilot Credit - Assessment and Planning for Resilience	OR other		1			
			1	c1.2	Boston Green: Groundwater Recharge		1			
1				c1.3	ID: EP in Access to Quality Transit		1			
1				c1.4	ID: Green Building Education		1			
1				c1.5	ID: EP Reduced Parking Footprint		1			
1				c2	LEED Accredited Professional		1			

1			Regional Priority			Possible Points	4
P	A	N					
			1	c1	Renewable Energy Production - 5%		1
			1	c2	Optimize Energy Performance (8 pt threshold)		1
			1	c3	High Priority Site (2pt threshold)		1
			1	c4	Rainwater Management (2 pt threshold)		1
			1	c5	Indoor Water Use Reduction - 40%		1

Campus /Master Site Credits
 PURSUING (P): Credit being pursued as part of strategy
 ALTERNATE (A): Credit is being tracked as an alternate
 NOT PURSUING (N): Credits not pursuing or not applicable

