



CHANGE.
CHICAGO HOUSING AUTHORITY



CHA GREEN ASSESSMENT

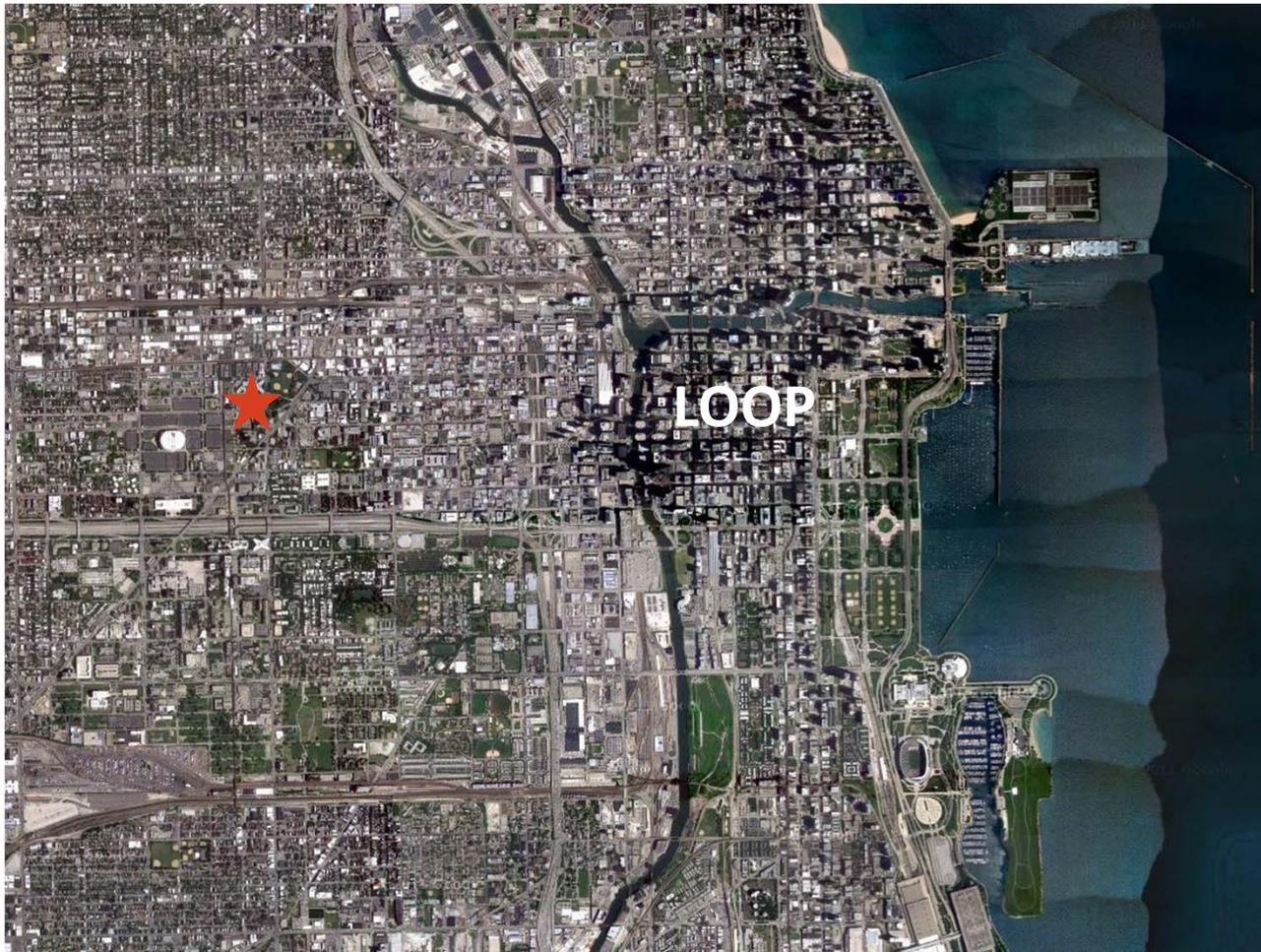
LEED EBOM Compliance in Sustainable Sites, Materials & Resources and Indoor Environmental Quality July 14, 2011

David W. Anderson, CEM
Chicago Housing Authority
e: DaAnderson@thecha.org
p: 312.913.7704

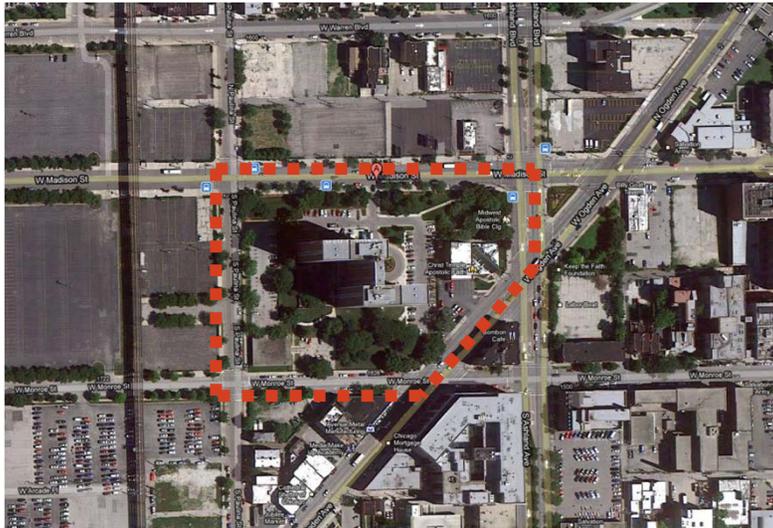
Susan Heinking, MArch, AIA,
NCARB, LEED AP O+M
HOK
e: Susan.Heinking@hok.com
p: 312.254.5306

Isilay Civan, MSc, PHD²
LEED AP O+M
HOK
e: Isilay.Civan@hok.com
p: 312.254.5374

LOCATION MAP: PATRICK SULLIVAN APARTMENTS



PATRICK SULLIVAN APARTMENTS



At A Glance

Property Name: Patrick Sullivan Apartments
AMP Number: IL002067
Property Type: Senior Housing / High-rise
PM Company: East Lake Management Group

Eligibility for LEED EBOM Certification: YES
Prerequisites: 9
Achievable (A): 7
Short-term (S): 2

Property Characteristics:
22 stories
482 units
3.5 acres

Unit Breakdown:
346 occupied
131 vacant
5 non-dwelling
7 down (mold)

Unit Types
200 one-bedroom (non-ADA)
40 one-bedroom (ADA)
160 studio (non-ADA)
80 efficiency (non-ADA)
2 two-bedroom, two bath (non-ADA)

Data Sources:
8 units visited
25 residents surveyed
(Sample size: 7%)
PM survey & follow-up interview

Quick Snapshot of Results:
Currently Compliant (C): 14 pts
Achievable (A): + 29 pts

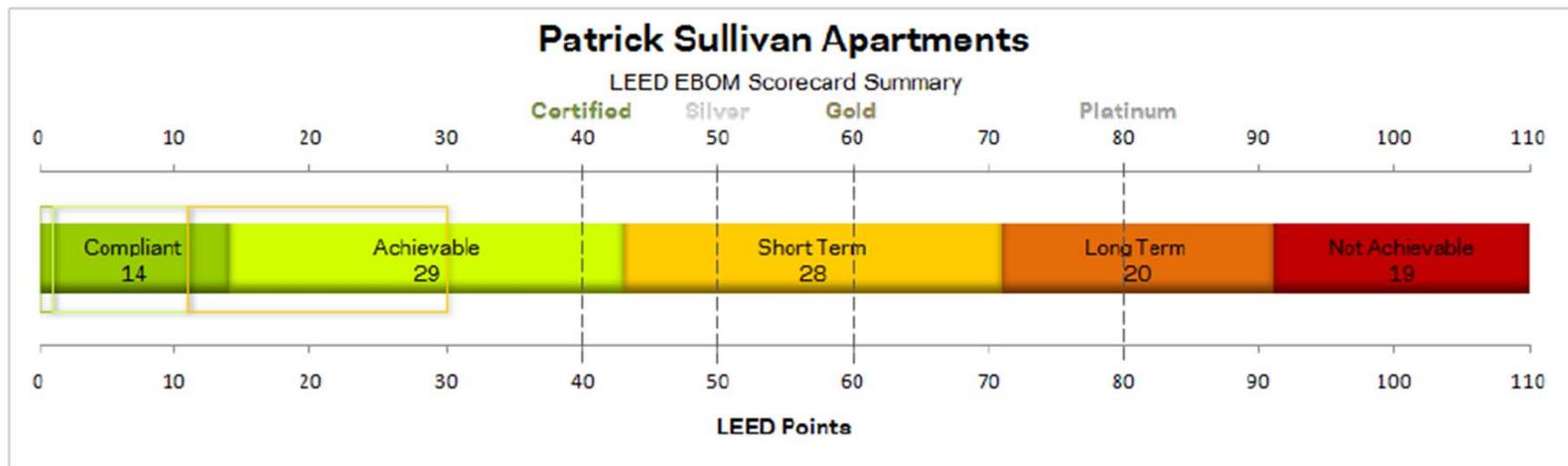
LEED Certified Level Anticipated

Short-term credits (S): + 28 pts
Long-term credits (L): + 20 pts

Current Energy Reduction: 32%
Current Water Reduction: 17%

LEED SCORE

- Complies with 7 of 9 Prerequisites
 - EAp1 & IEQp2 are slated for short term with high priority



RESIDENT SURVEY RESPONSES



Please fill in your property name: _____

Mark your answers in the green boxes:

1. What is your primary method of transportation?

walk car bike bus train

If you checked Bike, where do you store it? _____

7. What types of light bulbs do you use?

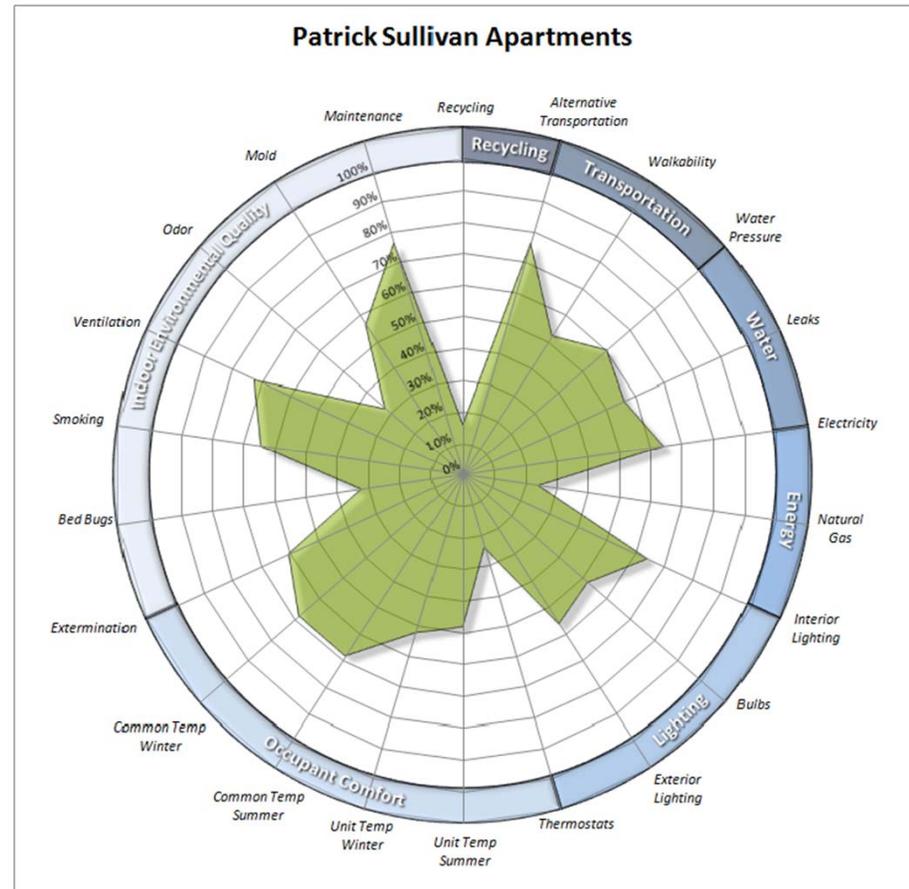
CFLs incandescents combination of both

8. Are you comfortable with the outside lighting?

yes no, too bright no, not bright enough

• **20** question resident survey

- **7** main topics covered:
- Recycling
 - Transportation
 - Water
 - Energy
 - Lighting
 - Occupant Comfort
 - Indoor Environmental Quality



Status	C	A	S	L	N
Points	0	0	0	0	0

KEY SHEET

C • Currently Compliant

A • Achievable

S • Short Term

L • Long Term

N • Not Achievable

Credit | Title

Intent	Describes the objective of each prerequisite/credit per the LEED EBOM Reference Guide.
Requirements	Describes what must be done to earn each prerequisite or credit per the LEED EBOM Reference Guide.
Alternative Compliance Path(s)	Showcases the <u>applicable</u> alternative ways of achieving the prerequisite/credit, if/when applicable. Either identify and focus on the most suitable path, or provide recommendations on several applicable ones with their associated costs and savings to assist with an educated decision.
Related Credits/Synergies	Synergy refers to the interrelation between the different LEED EBOM prerequisites/credits.
Implementation	Details the specifics of how to achieve the prerequisite/credit for each applicable Compliance Path (or Option).
Financial Impact <i>As determined by CHA</i>	No cost Low Cost (under \$25,000 to implement) Moderate Cost (between \$25,000 and \$100,000 to implement) High Cost (over \$100,000 to implement)
Comments	Project specific observations, remarks, considerations, unique issues, exemplary performance and regional priority potential etc.
Next Steps	<ul style="list-style-type: none"> - Unique steps to meet credit intent - References to applicable revised CHA PPMP Manual Chapters for policy/plan credits - Performance Period tasks if applicable - CHA Resident Involvement if applicable



SUSTAINABLE SITES

- Implement Effective Grounds Management
- Practice Low-Impact Hardscape Strategies
- Plant Sustainable Landscapes
- Reduce Emissions Associated with Transportation
- Protect Surrounding Habitats
- Manage Stormwater Runoff
- Reduce Heat Island Effects
- Eliminate Light Pollution

SUSTAINABLE SITES CHECKLIST

LEED EBOM 2009 Project Checklist

Currently Compliant	Achievable	Short-Term	Long-Term	Not Achievable
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Total Possible Points

Sustainable Sites

				4	SSc1 LEED Certified Design and Construction	4
	1				SSc2 Building Exterior and Hardscape Management Plan	1
	1				SSc3 Integrated Pest Management, Erosion Control, and Landscape Management Plan	1
	15				SSc4 Alternative Commuting Transportation	15
			1		SSc5 Site Development: Protect or Restore Open Habitat	1
			1		SSc6 Stormwater Quantity Control	1
		1			SSc7.1 Heat Island Reduction: Nonroof	1
			1		SSc7.2 Heat Island Reduction: Roof	1
		1			SSc8 Light Pollution Reduction	1
0	17	2	3	4	26 Points Possible	26

SSc1 - LEED Certified Design & Construction



At A Glance

- No Cost
- Property-specific

Credit Highlights

- Awards **4 Points** for a building with a prior LEED Certification
- Patrick Sullivan Apartments does not qualify

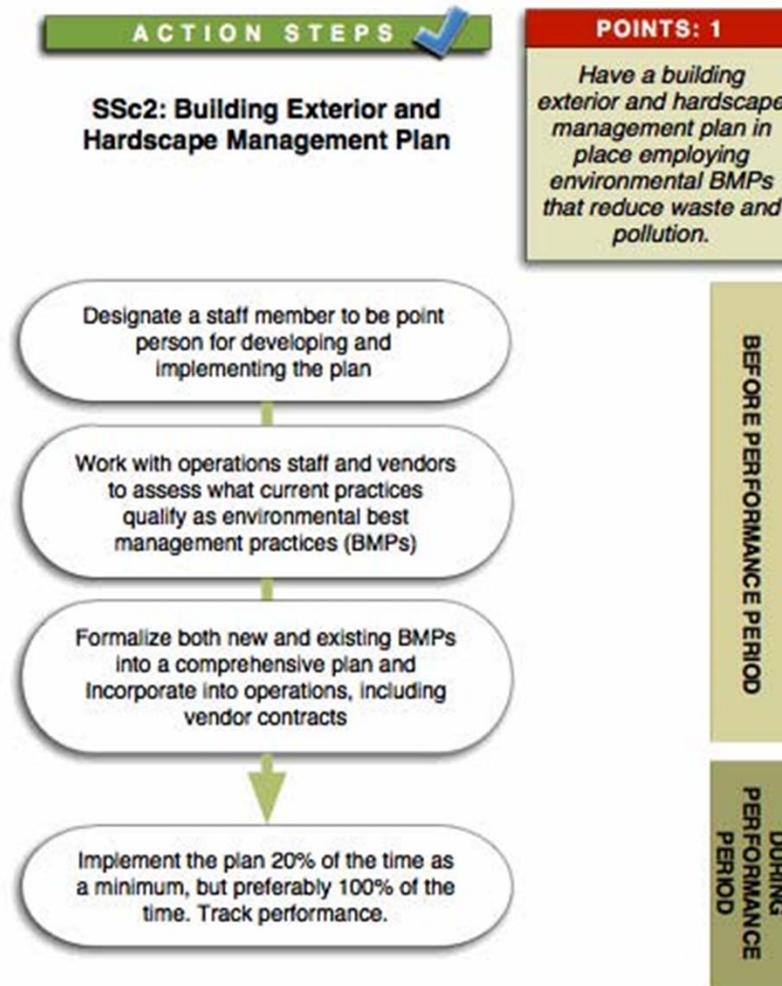
Status	C	A	S	L	N
Points	0	0	0	0	4

SSc1 | LEED Certified Design & Construction

Intent	To reward environmentally sensitive building design and construction, thereby enabling high-performance building operations to be achieved more easily.
Financial Impact	N/A
Comments	This credit cannot be pursued because the building has not been previously certified under any of the LEED rating systems.
Next Steps	N/A



SSc2 – Building Exterior & Hardscape Management Plan



At A Glance

- Policy
- Low Cost
- Portfolio-wide

Credit Highlights

- Resident responses help to gauge success
- Achievability depends on implementation of the Plan in the CHA PPMP Manual



13 CHA GREEN PROPERTY ASSESSMENT

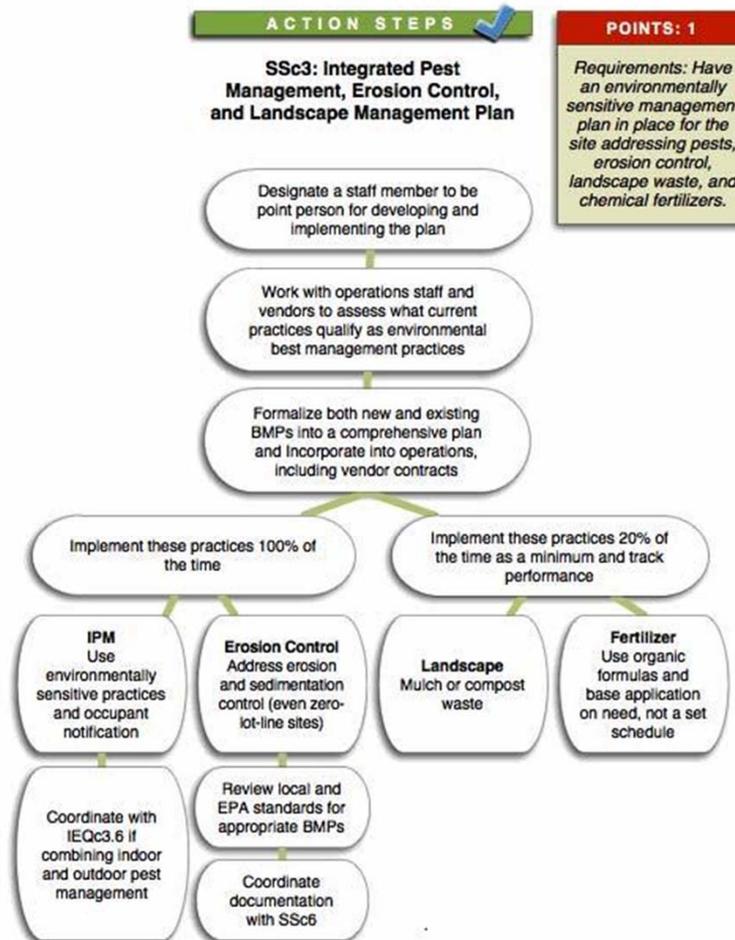
Status	C	A	S	L	N
Points	0	1	0	0	0

SSc2 | Building Exterior & Hardscape Management Plan

Intent	To encourage environmentally sensitive building exterior and hardscape management practices that provide a clean, well-maintained and safe building exterior while supporting high-performance building operations.
Financial Impact	<p>LOW COST - depending on actual life cycle of current maintenance equipment and costs of replacing CHA's and the property management company's maintenance equipment with newer, more energy efficient equipment.</p> <ul style="list-style-type: none"> · Investigate if cost of maintenance equipment upgrades will be carried by vendor.
Comments	<ul style="list-style-type: none"> · Current CHA PPMP Manual does not include a LEED EBOM compliant policy related to the Building Exterior and Hardscape Management. · Hardscapes (asphalt parking lot, driveway/road, the concrete sidewalks and courtyard) are currently swept daily. · Of the 7% response rate, only 52% of the respondents reported that the sidewalks on the property are walkable year round.
Next Steps	<ul style="list-style-type: none"> · Achievability of the credit depends on the successful implementation of the Building Exterior and Hardscape Management Plan located in the revised CHA PPMP Manual. · Time and frequency of activities need to be reassessed to ensure compliance with noise bylaws and to improve efficiency. · Paints & sealants, cleaners, snow-melting chemicals, etc. need to be revised per the revised CHA PPMP Manual.



SSc3 – Integrated Pest Management (IPM), Erosion Control & Landscape Management Plan



At A Glance

- Policy
- Low Cost
- Portfolio-Wide

Credit Highlights

- Vendor contract structure is vital

- Achievability depends on implementation of the Plan in the CHA PPMP Manual

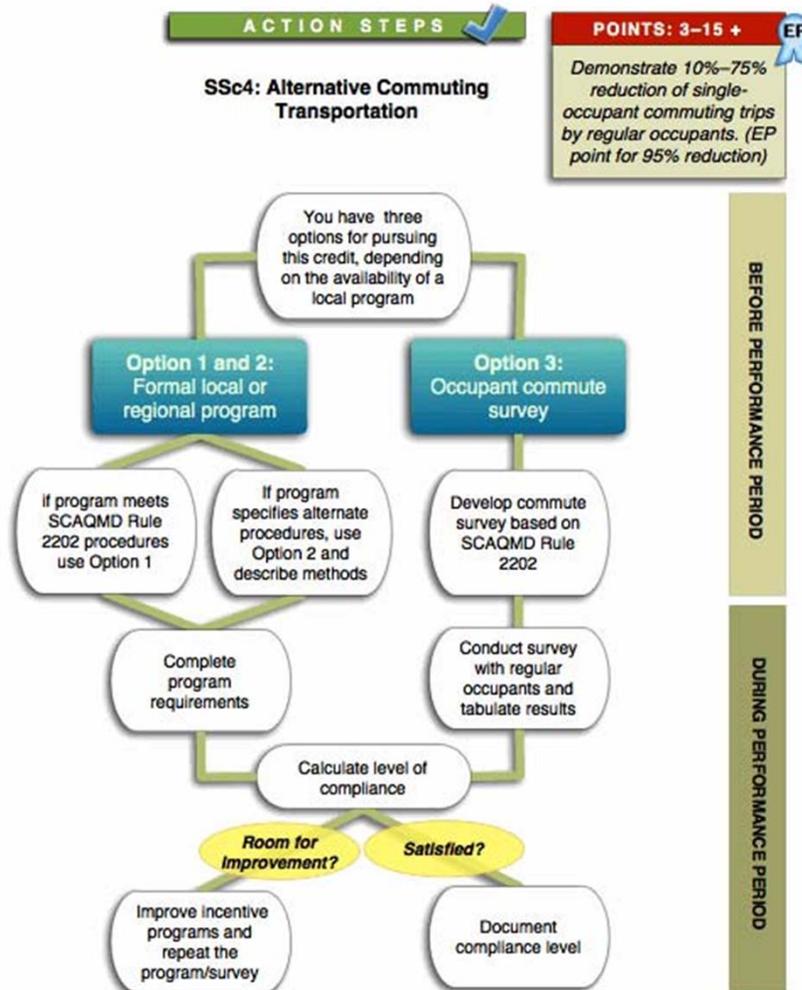


Status	C	A	S	L	N
Points	0	1	0	0	0

SSc3 | Integrated Pest Management (IPM), Erosion Control & Landscape Management Plan

Intent	To preserve ecological integrity, enhance natural diversity, and protect wildlife while supporting high-performance building operations and integration into the surrounding landscape.
Financial Impact	LOW COST
Comments	<ul style="list-style-type: none"> · Current CHA PPMP Manual does not include a LEED EBOM compliant policy related to the IPM, Erosion Control and Landscape Management. · Landscape waste is currently diverted from the site by the landscaping vendor. · The site currently consists of grass, flowering plantings, non-flowering plantings, deciduous trees and shrubs.
Next Steps	<p>Performance Period</p> <ul style="list-style-type: none"> · Achievability of the credit depends on the successful implementation of the Integrated Pest Management Plan, Erosion Control Plan, and Landscape Management Plan found in the revised CHA PPMP Manual and keeping records of related data. · Require all CHA Exterminating contractors to be members of Green Pro (see Recommended Resources section of this report for details), an environmentally friendly exterminating standard in the industry.

SSc4 – Alternative Commuting Transportation



At A Glance

- Low Cost
- Property-specific
- Calculation
- Measurement & Verification

Credit Highlights

- Resident responses help to determine success
 - Requires a **68%** response rate from residents
- Urban location with easy public transit access benefits most CHA properties

What is your primary method of transportation?

<input type="checkbox"/> walk		<input type="checkbox"/> car	
<input type="checkbox"/> bike		<input checked="" type="checkbox"/> bus	
<input type="checkbox"/> train			

Status	C	A	S	L	N
Points	0	15	0	0	0

SSc4 | Alternative Commuting Transportation

Intent	To reduce pollution and land development impacts from conventional automobile use for commuting trips.
Financial Impact	NO COST or MODERATE COST - depending on the level of resident incentives offered
Comments	<ul style="list-style-type: none"> · The property has a total of 482 units, 346 currently occupied, and 110 parking spaces reserved for residents. · The property is within 0.3 miles to the Ashland-Lake Green & Pink Line and 0.05 miles to two Bus lines (#9 and #20). · 25 bicycle spaces are located on site. · The property also provides weekly bus trips to the grocery store for residents. · Based on the resident surveys, <ul style="list-style-type: none"> - Of the 7% response rate, 76% of the respondents reported that they currently use alternative transportation. - Based on the low response rate and collected data, the property is not anticipated to be currently compliant for any points for reduction in conventional commute trips. - Through extrapolation of the collected data, 75% reduction (15 points) is suspected to be achievable through increased frequency and use of group bus programs for grocery shopping, etc.

Resident Survey Data

Resident Survey Response	Total Number of Occupants	346
	Total Occupants Surveyed	25
	Occupants Surveyed using Alternative Transportation	19
	% of Total Occupants Surveyed	7%
	Total % Using Alternative Transportation	5%
	Extrapolated % Using Alternative Transportation	76%
SSc4 Points	Currently Compliant	-
	Achievable	15
	Short Term	-
SSc4 Exemplary Points	Currently Compliant	-
	Achievable	-
	Short Term	1
% Needed for Performance Period Survey		68%

Status	C	A	S	L	N
Points	0	15	0	0	0

SSc4 | Alternative Commuting Transportation *Continued*

Comments

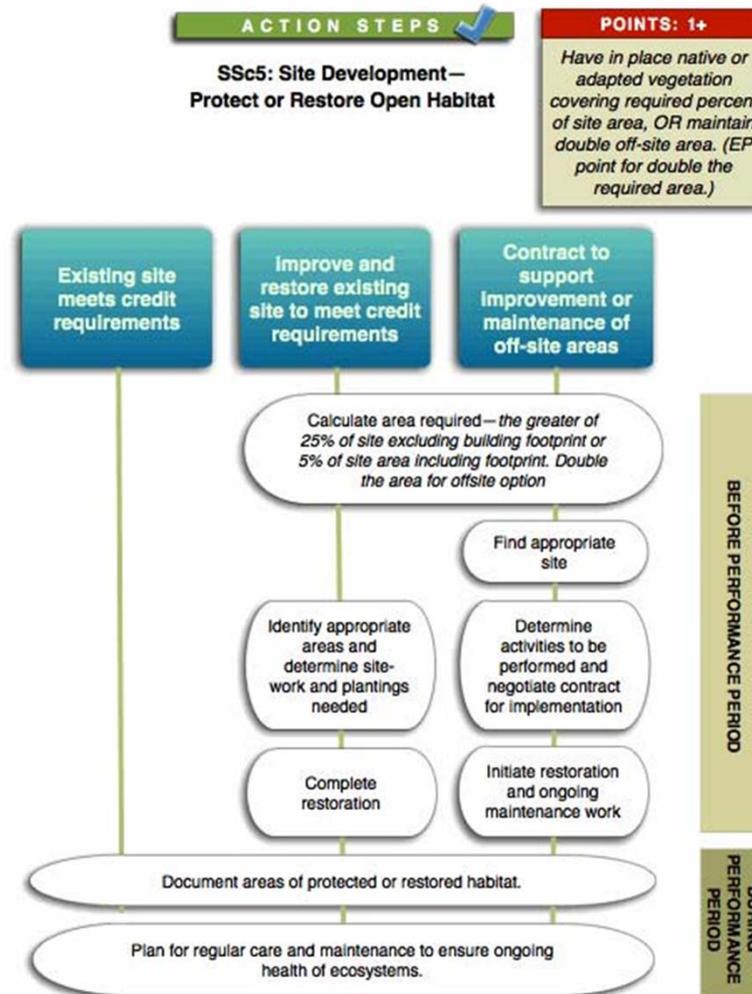
- Credit eligible for **exemplary performance** when 95% or greater reduction (additional 1 point) in conventional commute trips is achieved, currently assessed under Innovation in Operations credit 1.
- Credit eligible for **Regional Priority** (additional 1 point)

Next Steps

Performance Period

- Achievability of the credit depends on conducting a formal resident survey of at least 68% of building residents to confirm initial survey findings.
 - If the property participates in a formal commute reduction program, keep participation records.
- #### CHA Involvement
- Promote the Seniors Ride Free Program (see [Recommended Resources](#) section of this report for details) provided by the Regional Transportation Authority (RTA) through resident services.
 - Consider utilizing the City of Chicago Department of Transportation's Bicycle Program (see [Recommended Resources](#) section of this report for details) to install and/or maintain bike racks at the property.

SSc5 – Site Development – Protect or Restore Open Habitat



At A Glance

- Moderate Cost
- Property-specific
- Calculation

Credit Highlights

- Turf grass area larger than 1 acre presents challenge



Status	C	A	S	L	N
Points	0	0	0	1	0

SSc5 | Site Development - Protect or Restore Open Habitat

Intent	To conserve existing natural site areas and restore damaged site areas to provide habitat and promote biodiversity.
Financial Impact	MODERATE COST
Comments	<ul style="list-style-type: none"> • The site currently consists of grass, flowering plantings, non-flowering plantings, deciduous trees and bushes. • The large area of turf grass presents a challenge for the achievability of the credit. • Credit eligible for exemplary performance when 50% on-site and/or 100% off-site requirements are met.
Next Steps	<p>Performance Period</p> <ul style="list-style-type: none"> • Achievability of the credit depends on the restoration of 25% of the site area with the suggested plants/species outlined in the Landscape Management Plan in the revised CHA PPMP Manual, and a list of the plant sizes, species and descriptions, and final area calculation at the end of the performance period.

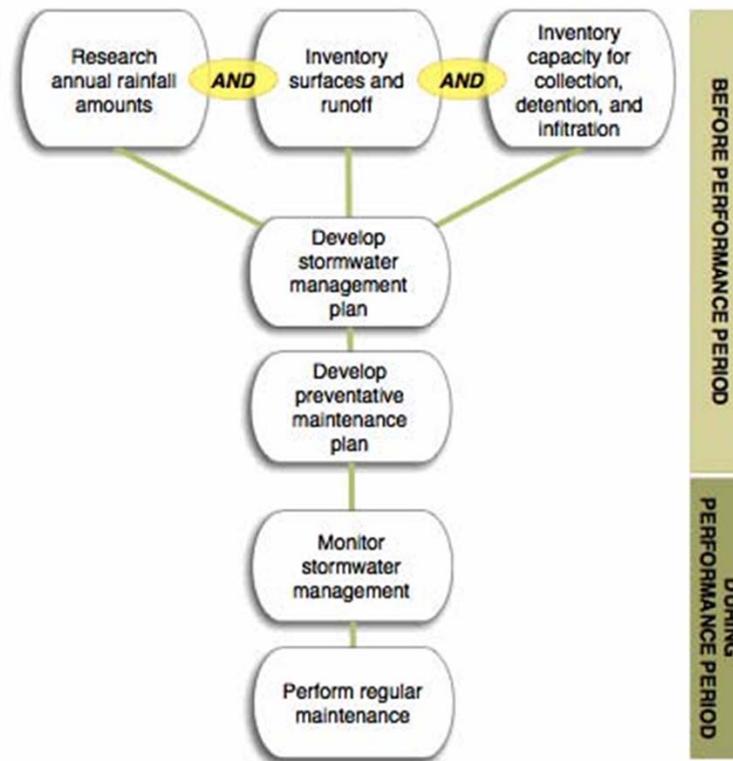
SSc6 – Stormwater Quantity Control

ACTION STEPS 

SSc6: Stormwater Quantity Control

POINTS: 1

Implement a stormwater management plan, with annual inspection, that prevents runoff of ≥15% of both annual and peak 24-hour precipitation.



At A Glance

- Policy
- High Cost
- Property-specific
- Measurement & Verification

Credit Highlights

- Stormwater collection on site would be difficult & expensive

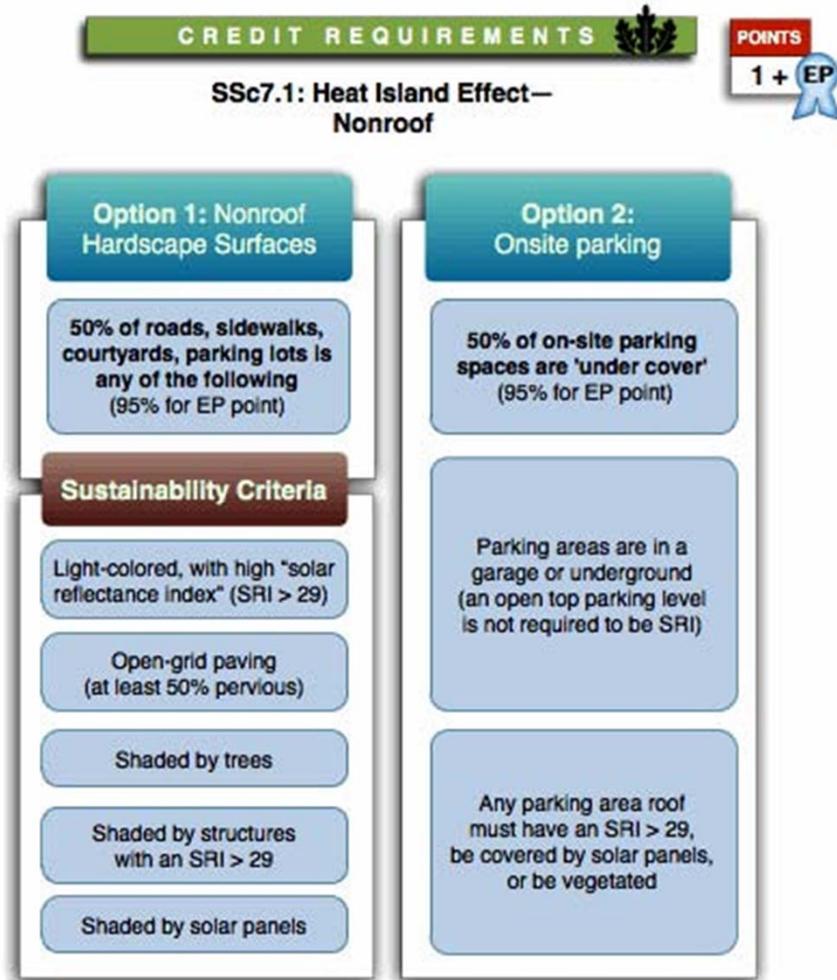


Status	C	A	S	L	N
Points	0	0	0	1	0

SSc6 | Stormwater Quantity Control

Intent	To limit the disruption of natural hydrology by the building and grounds.
Financial Impact	HIGH COST
Comment	<ul style="list-style-type: none"> • Currently all site stormwater drains to the city sewer. • While there is enough landscaping to justify a cistern installation with significant pumping capacity to water the lawn, such a project could exceed \$100,000. • Credit eligible for exemplary performance when 30% reduction on stormwater runoff is achieved. • Credit eligible for Regional Priority (additional 1 point).
Next Steps	<ul style="list-style-type: none"> • Currently slated as a long-term credit. CHA might reconsider pending a decision regarding the recent conversations on the viability of recent rainwater technologies from Geosyntec Consultants.
Performance Period	<ul style="list-style-type: none"> • If the credit is pursued, implement the Stormwater Management Plan located in the revised CHA PPMP Manual and track the amount of stormwater collected and used. Keep maintenance and inspection records and logs. Perform all routine required maintenance within 60 days of inspections.

SSc7.1 – Heat Island Reduction: Non-Roof

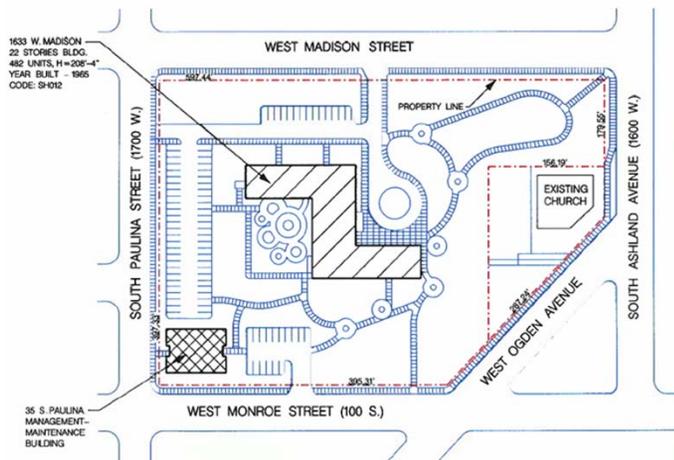


At A Glance

- Low cost
- Property-specific
- Measurement & Verification

Credit Highlights

- Hardscapes shaded by landscaping aids achievability

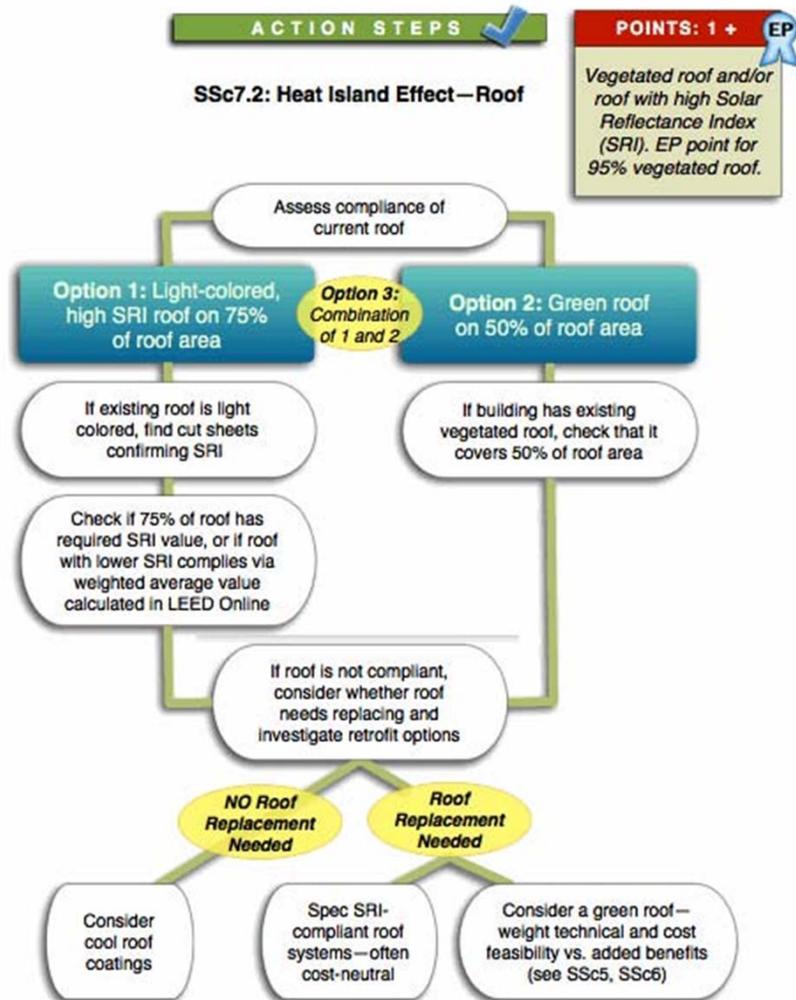


Status	C	A	S	L	N
Points	0	0	1	0	0

SSc7.1 | Heat Island Reduction: Non-Roof

Intent	To reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impacts on microclimates and human and wildlife habitat
Financial Impact	LOW COST
Comments	<ul style="list-style-type: none"> • The site's hardscape is partially shaded by trees and buildings and the courtyards are currently concrete which will aid in the achievability of this credit. • The shaded asphalt parking lot will aid in the achievability of the credit. • Credit eligible for exemplary performance when 95% of site hardscape or parking spaces meet the requirement.
Next Steps	<ul style="list-style-type: none"> • Increase shading at the parking lot and access roads by planting trees. • Install hardscape materials with a Solar Reflectance Index (SRI) value of at least 29 and ensure surfaces are maintained according to the Building Exterior and Hardscape Management Plan located in the revised CHA PPMP Manual.

SSc7.2 – Heat Island Reduction: Roof



At A Glance

- Moderate-High Cost
- Property-specific
- Measurement & Verification

Credit Highlights

- Schedule roof replacement prior to performance period



Status	C	A	S	L	N
Points	0	0	1	0	0

SSc7.2 | Heat Island Reduction: Roof

Intent	To reduce heat islands (thermal gradient differences between developed and undeveloped areas) to minimize impacts on microclimates and human and wildlife habitat
Financial Impact	MODERATE TO HIGH COST - due to the need to change the roofing material
Comments	<ul style="list-style-type: none"> • Existing roofing material is asphalt. • Current roof was installed in 1999 and is expected to be replaced in the near term. • Credit eligible for exemplary performance if 95% of the roof is replaced with a vegetated roof. • Credit eligible for Regional Priority (additional 1 point).
Next Steps	<ul style="list-style-type: none"> • This credit is anticipated to be achievable in the short term when the current roof material is scheduled to be replaced. To achieve this credit without an additional investment for a vegetated roof, the new roof surface must have an SRI value greater than 79 and the roof surface must be maintained according to the Building Exterior and Hardscape Management Plan located in the revised CHA PPMP Manual. • Additionally, pending CHA's existing discussions with Geosyntec Consultants regarding the implementation of a rainwater collection system through a vegetated roof for all properties, pursuing exemplary performance for this credit might become an option for this site.

SSc8 – Light Pollution Reduction

CREDIT REQUIREMENTS

POINTS

1

SSc8: Light Pollution Reduction

Interior Lighting

All non-emergency built-in lighting with direct line of site to any envelope opening must be controlled to automatically turn off after hours

Lights have to be off for at least 50% of after hours time

Implement a maintenance program to ensure that the automatic system is working properly

Exterior Lighting

Option 1:
LEED certification

OR

Option 2:
Shield fixtures

OR

Option 3:
Measure exterior lighting

Demonstrate that the building earned this credit under LEED-NC or LEED for Schools, or LEED-CS and LEED-CI

Shield fixtures greater than 50 watts from the night sky

Take measurements showing that exterior lighting does not increase site perimeter light levels by more than 20%

At A Glance

- Low Cost
- Property-specific

Credit Highlights

- 24 hour residential occupancy provides exemption for interior lighting shielding requirements



Status	C	A	S	L	N
Points	0	0	1	0	0

SSc8 | Light Pollution Reduction

Intent	To eliminate light trespass from the building and site, improve night sky access and reduce development impact on nocturnal environments.
Financial Impact	LOW COST - due to installation of shield
Comments	<ul style="list-style-type: none"> • Exterior 30' high pole mounted fixtures contain metal halide lamps that are 50 Watts and above and are not partially shielded. These fixtures currently do not meet the intent of this credit. • Exterior 25' high pole mounted fixtures contain metal halide lamps that are 50 Watts and above and are fully shielded. These fixtures currently meet the intent of this credit. • Exterior 12' high pole mounted fixtures contain metal halide lamps that are 50 Watts and above and are fully shielded. These fixtures currently meet the intent of this credit. • Exterior courtyard, garden fixtures contain incandescent lamps that are 50 Watts and above and are fully shielded. These fixtures currently meet the intent of this credit. • Exterior walkway fixtures contain CFL lamps that are less than 50 Watts and are fully shielded. These fixtures currently meet the intent of this credit. • Interior lights are manually operated; however this site has 24 hour operation and is therefore exempt from the requirement for an afterhours override automatic shut-off.
Next Steps	<ul style="list-style-type: none"> • Install a shield to prevent light pollution from emitting into the sky. The 30' pole fixtures should be partially or fully shielded such that emission above the horizontal plane is minimized.



MATERIALS & RESOURCES

- Sustainable Materials
- Practice Waste Reduction Strategies
- Reduce Source Waste
- Reuse & Recycle
- Reduce Mercury Pollution

MATERIALS + RESOURCES CHECKLIST

LEED EBOM 2009 Project Checklist

Currently Compliant	Achievable	Short-Term	Long-Term	Not Achievable
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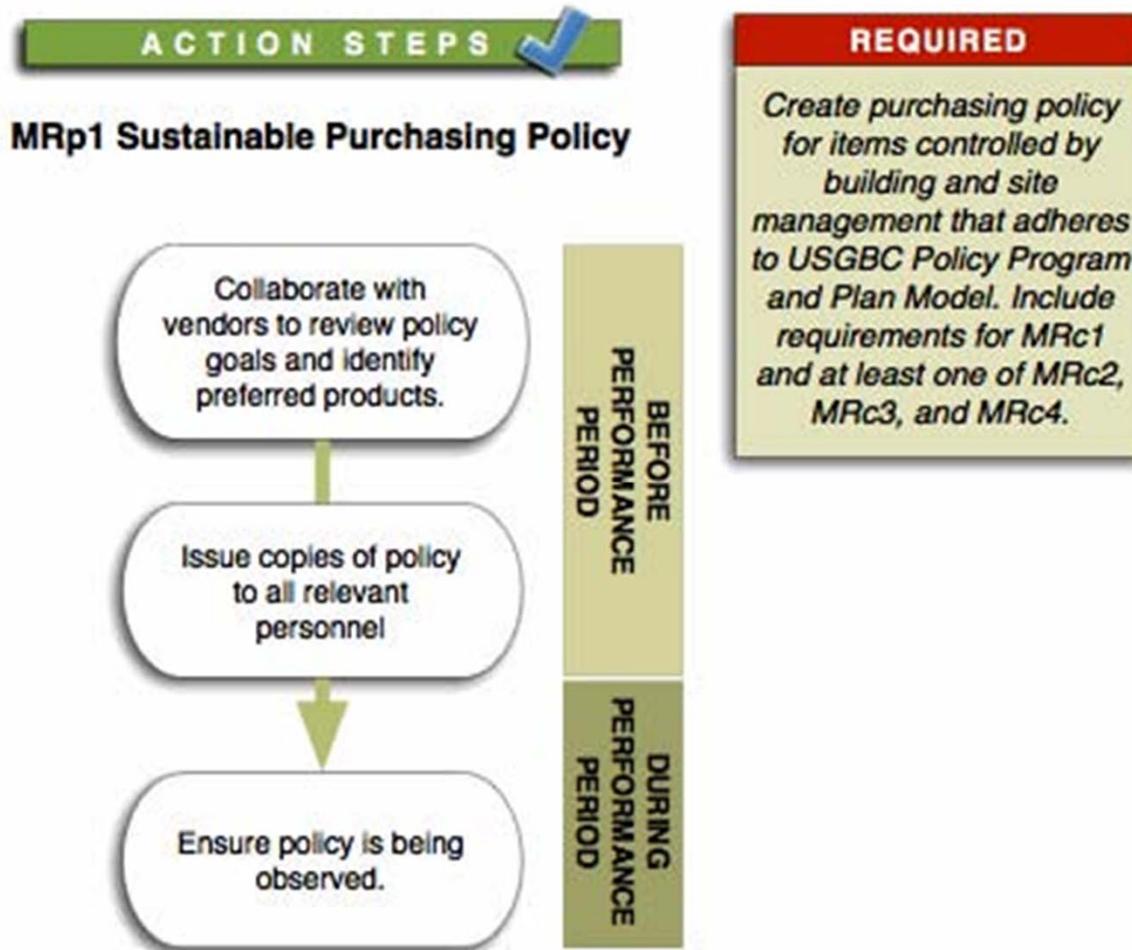
Total Possible Points

Materials & Resources

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<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MRp2	Solid Waste Management Policy	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MRc1	Sustainable Purchasing: Ongoing Consumables	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MRc2	Sustainable Purchasing: Durable Goods	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MRc3	Sustainable Purchasing: Facility Alternatives and Additions	<input type="checkbox"/>
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MRc5	Sustainable Purchasing: Food	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MRc6	Solid Waste Management: Waste Stream Audit	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MRc7	Solid Waste Management: Ongoing Consumables	<input type="checkbox"/>
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<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	MRc9	Solid Waste Management: Facility Alterations and Additions	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Total	10 Points Possible	<input type="checkbox"/>



MRp1 – Sustainable Purchasing Policy



At A Glance

- Policy
- No Cost
- Portfolio-wide

Credit Highlights

- Achievability depends on implementation of the Plan in the CHA PPMP Manual
- Targeting desired percentage threshold of green purchases will help achieve MR credits

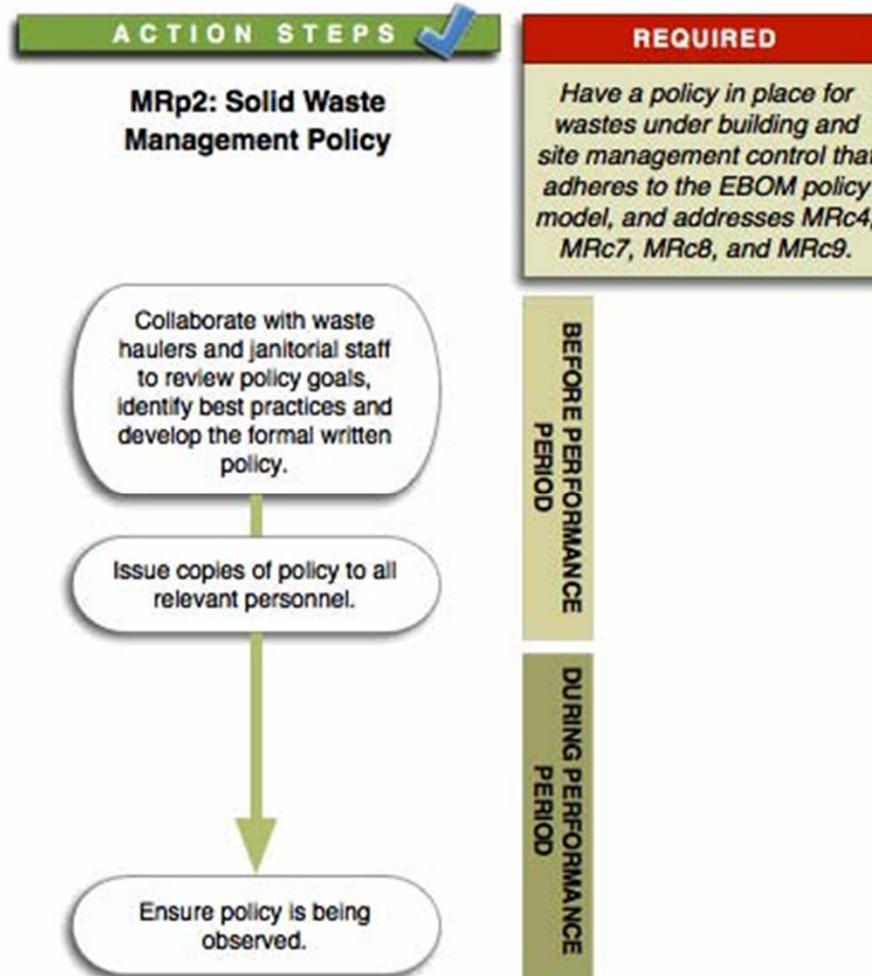
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Points	<input type="checkbox"/>	<input checked="" type="checkbox"/> X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

MRp1 | Sustainable Purchasing Policy

Intent	To reduce the environmental impacts of materials acquired for use in the operations, maintenance, and upgrades of buildings
Financial Impact	NO COST
Comments	<ul style="list-style-type: none"> · All prerequisites must be met to be qualified for any level of LEED certification. · This prerequisite requires only policies, not ongoing actual sustainable performance. LEED recognizes that putting a policy into action can sometimes take time. Therefore, having a policy and implementing that policy are dealt with separately. · To achieve Materials & Resources credits 1-5 that are based on this policy prerequisite, documentation of purchasing data for all residents must be obtained.
Next Steps	<ul style="list-style-type: none"> · To satisfy this prerequisite, the Sustainable Purchasing Policy located in the revised CHA PPMP Manual needs to be utilized. <p>CHA Involvement</p> <ul style="list-style-type: none"> · Consider providing incentives for residents to purchase sustainable items.



MRp2 – Solid Waste Management Policy



At A Glance

- Policy
- No Cost
- Portfolio-wide

Credit Highlights

- Achievability depends on implementation of the Plan in the CHA PPMP Manual
- Targeting desired percentage threshold of recycled materials can help achieve MR credits



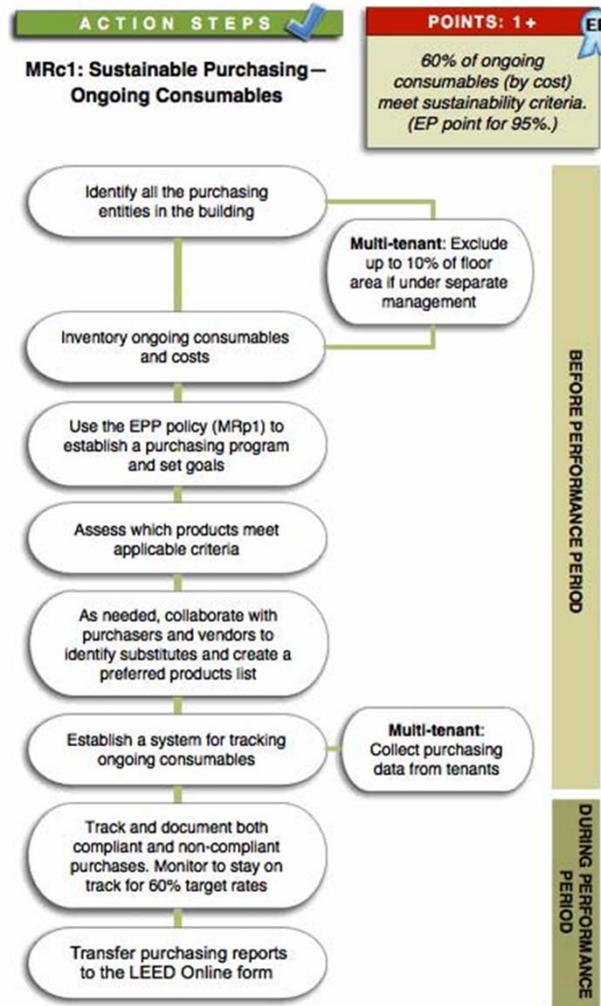
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Points	<input type="checkbox"/>	<input checked="" type="checkbox"/> X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

MRp2 | Solid Waste Management Policy

Intent	To reduce the environmental impacts of materials acquired for use in the operations, maintenance, and upgrades of buildings
Financial Impact	NO COST
Comments	<ul style="list-style-type: none"> · All prerequisites must be met to be qualified for any level of LEED certification. · This prerequisite requires only policies, not ongoing actual sustainable performance. LEED recognizes that putting a policy into action can sometimes take time. Therefore, having a policy and implementing that policy are dealt with separately. · Currently, the property does not have a recycling program in place. · The property does not provide recycling containers next to trash receptacles in common areas.
Next Steps	<ul style="list-style-type: none"> · To satisfy this prerequisite, the Solid Waste Management Policy detailed in the revised CHA PPMP Manual will need to be utilized. The policy may be aided by auditing the property's waste stream (see MRc6 for details) and encouraging the reuse and recycling of items where possible. · Allocate recycling space in common areas and locate space within the building to separate and collect waste for recycling or reuse.
CHA Involvement	<ul style="list-style-type: none"> · Encourage residents to participate in the Recycling Plan for CHA Developments through the Resource Center. The program compensates residents with money, vouchers or coupons for recycling through the Local Advisory Council. · Consider participating to the Call2Recycle® Program (see Recommended Resources for more details), a free rechargeable battery and cell phone collection program in North America.



MRC1 – Sustainable Purchasing: Ongoing Consumables



At A Glance

- Policy
- Low Cost
- Portfolio-wide
- Calculation
- Measurement & Verification

Credit Highlights

- Ongoing consumables must be purchased during performance period
- Data from all residents is desirable for credit achievability
- Practices can still be employed by residents & property management to improve sustainable purchasing at the property

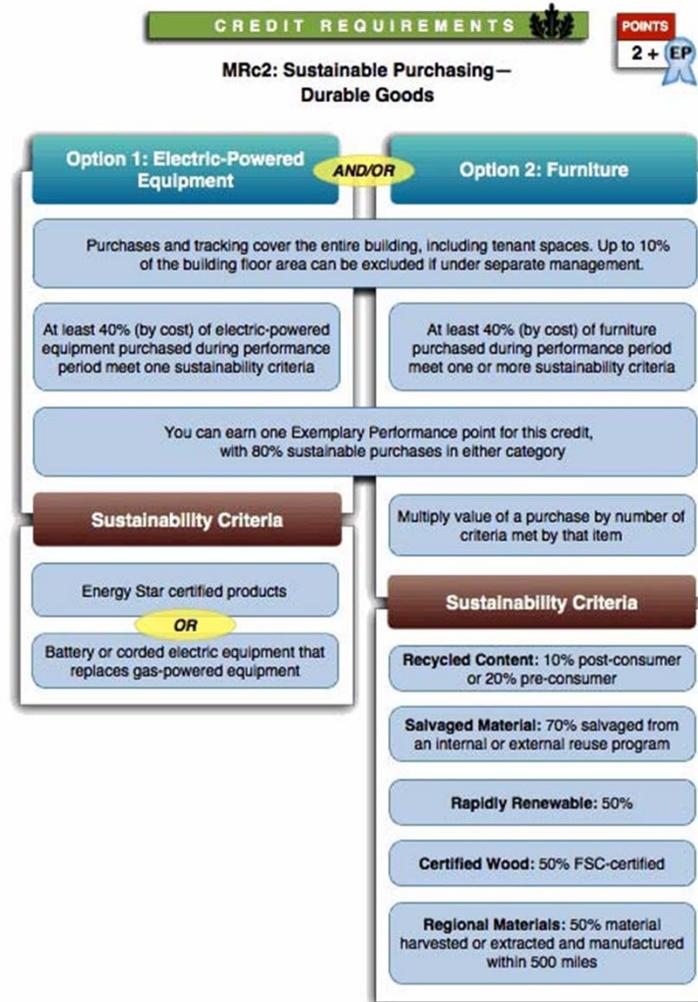
Status	C	A	S	L	N
Points	0	0	0	0	1

MRc1 | Sustainable Purchasing: Ongoing Consumables

Intent	To reduce the environmental and air quality impacts of the materials acquired for use in the operations and maintenance of buildings
Financial Impact	LOW COST
Comments	<ul style="list-style-type: none"> • The submittal for this credit requires purchasing data for the entire building, inclusive of all residents. • Ongoing consumables must be purchased during the performance period to earn points in this credit. • Credit eligible for exemplary performance when 95% or more sustainable purchases over total purchases are achieved. • Due to the tremendous commitment and cooperation required from residents, this credit is slated as not achievable at this point. Nevertheless, the next steps recommended below are expected to improve sustainable purchasing at the property.
Next Steps	<p>Performance Period</p> <ul style="list-style-type: none"> • Achievability of the credit depends on the successful implementation and documentation of the Sustainable Purchasing Policy created in MRp1 and located in the revised CHA PPMP Manual. • Track the cost of all purchases of ongoing consumables. For all such purchases that meet one of the listed sustainability criteria, record the date of purchase, purchasing entity, type of item, cost, and quantity. • Data tracking and final calculation is required at the end of the performance period for a definitive determination on the achievability of this credit. <p>CHA Involvement</p> <ul style="list-style-type: none"> • Consider implementing a resident engagement program. • Consider including incentives for residents to purchase sustainable items.



MRc2 – Sustainable Purchasing: Durable Goods



At A Glance

- Policy
- Low Cost
- Portfolio-wide
- Calculation
- Measurement & Verification

Credit Highlights

- Durable Goods must be purchased during performance period
- Data from all residents is desirable for credit achievability
- Because most durable electronic goods are CHA-owned, this credit could be achieved in the long term

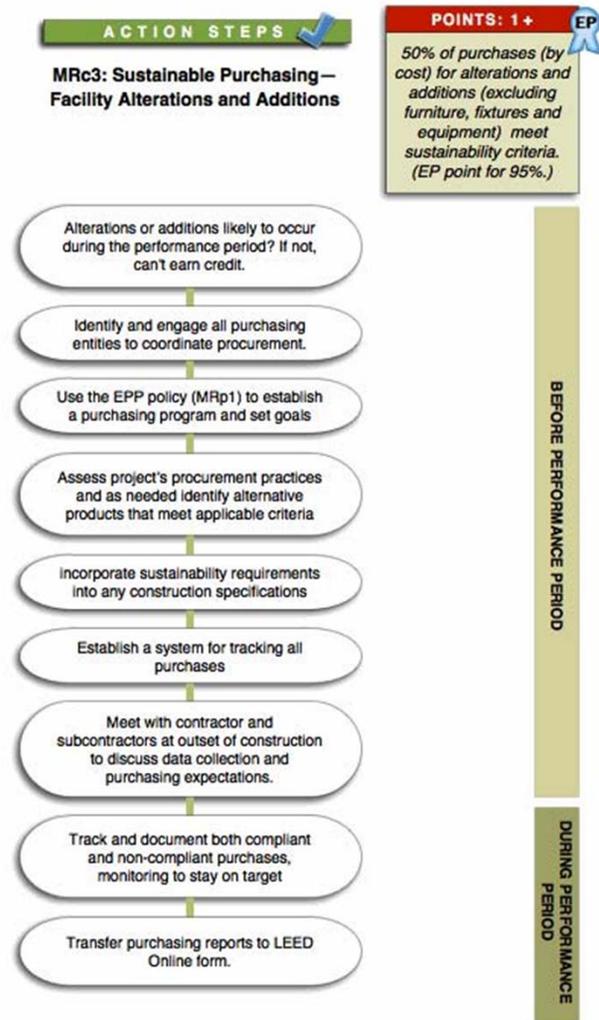
Status	C	A	S	L	N
Points	0	0	0	1	1

MRc2 | Sustainable Purchasing: Durable Goods

Intent	To reduce the environmental and air quality impacts of the materials acquired for use in the operations and maintenance of buildings
Financial Impact	LOW COST - due to Powered Equipment
Comments	<ul style="list-style-type: none"> • The submittal for this credit requires purchasing data for the entire building, inclusive of all residents. Therefore, the furniture purchasing requirements of this credit will be extremely difficult to adhere to and is slated as not achievable. • Durable goods must be purchased during the performance period to earn points in this credit. • Most electric-powered durable goods used on site are items that are purchased by CHA and maintained by management. These items are typically inherited from the previous property manager and not replaced often. • Credit eligible for exemplary performance when 80% sustainable electrical equipment purchases over total electronics purchases are achieved.
Next Steps	<p>Performance Period</p> <ul style="list-style-type: none"> • Achievability of the credit depends on the successful implementation and documentation of the Sustainable Purchasing Policy created in MRp1 and located in the revised CHA PPMP Manual for electric-powered equipment. • Track the cost of all purchases of durable goods, excluding any purchases already included in MRc1 and MRc3 calculations. For all such durable goods that meet one of the listed sustainability criteria, record the date of purchase, purchasing entity, type of item, cost, and quantity. For any electric-powered equipment replacing conventional gas-powered equipment, note the equipment that was replaced. • Data tracking and final calculation is required at the end of the performance period for a definitive determination on the achievability of this credit. • Consider implementing a salvaged products program that allows for storage of used/discarded furniture and equipment; the stored products will then be available as an alternative to purchasing new items. <p>CHA Involvement</p> <ul style="list-style-type: none"> • Consider providing incentives for residents to purchase sustainable items.



MRc3 – Sustainable Purchasing: Facility Alterations & Additions



At A Glance

- Policy
- Low Cost
- Portfolio-wide
- Calculation
- Measurement & Verification

Credit Highlights

- Data from all residents is desirable for credit achievability
- This credit is only achievable if facility alterations & additions occur during the performance period

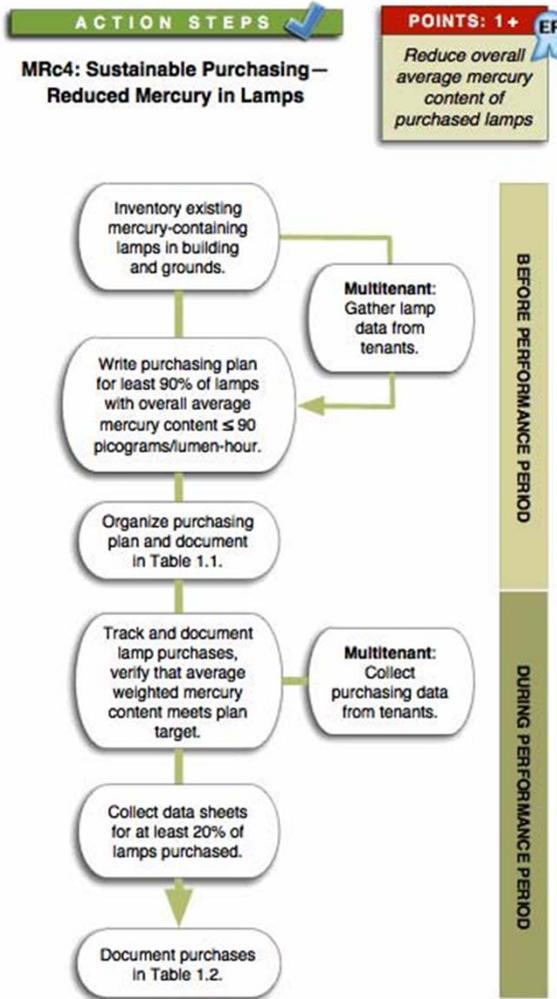
Status	C	A	S	L	N
Points	0	0	0	1	0

MRc3 | Sustainable Purchasing: Facility Alterations & Additions

Intent	To reduce the environmental and air quality impacts of the materials acquired for use in the upgrade of buildings
Financial Impact	LOW COST
Comments	<ul style="list-style-type: none"> · The submittal for this credit requires purchasing data for all materials acquired for facility alterations and additions in the entire building, inclusive of all residents. · This credit is only achievable if facility alterations and additions take place during the performance period and a percentage of those purchases meet criteria. · Credit eligible for exemplary performance when sustainable purchases for materials in facility alterations and additions account for 95% of total purchases are achieved.
Next Steps	<p>Performance Period</p> <ul style="list-style-type: none"> · Achievability of the credit depends on the successful implementation and documentation of the Sustainable Purchasing Policy created in MRp1 and located in the revised CHA PPMP Manual for facility alterations and additions. · Consider implementing a salvaged materials program that allows for storage of used/discarded/demolished items; the stored products will then be available as an alternative to purchasing new materials. · Coordinate any future facility alterations and additions to occur within the timeframe of the performance period. · Data tracking and final calculation is required at the end of the performance period for a definitive determination on the achievability of this credit.



MRc4 – Sustainable Purchasing: Reduced Mercury in Lamps



At A Glance

- Policy
- No Cost
- Property Specific
- Calculation
- Measurement & Verification

Credit Highlights

- Data from residents is required to achieve this credit
- Because most lamps are CHA-owned and bulbs are issued to residents, this credit could be achieved in the short term

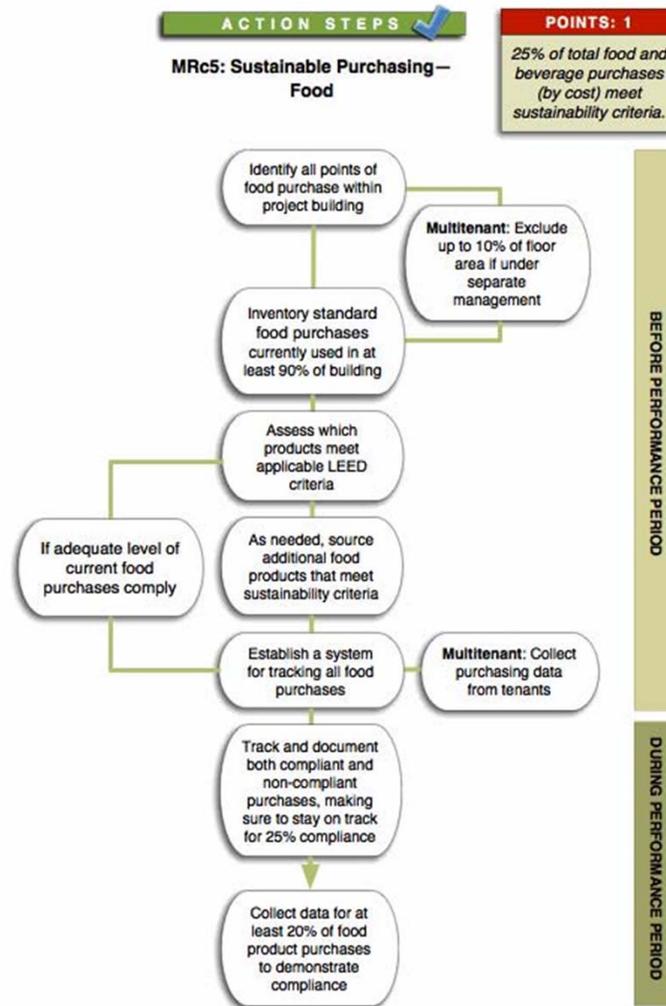
Status	C	A	S	L	N
Points	0	0	1	0	0

MRc4 | Sustainable Purchasing: Reduced Mercury in Lamps

Intent	To establish and maintain a toxic material source reduction program to reduce the amount of mercury brought onto the building site through purchases of lamps
Financial Impact	NO COST - assuming the currently purchased lamps are compliant
Comment	<ul style="list-style-type: none"> • The submittal for this credit requires purchasing data for the entire building, inclusive of all residents. Tremendous commitment and cooperation from residents is therefore required. • Property Management provides bulbs to residents. • Credit eligible for exemplary performance when 90% of lamps purchased over the performance period have an average mercury content of 70 picograms per lumen-hour or less.
Next Steps	<p>Performance Period</p> <ul style="list-style-type: none"> • Achievability of the credit depends on the successful implementation and documentation of the Sustainable Purchasing Policy created in MRp1 and located in the revised CHA PPMP Manual for reduced mercury in lamps. • Establish an inventory of lamps used throughout the property that includes mercury contained in each lamp (in picograms), manufacturer-rated lamp life (in hours), and the design light output per lamp (in lumens). • Data tracking and final calculation is required at the end of the performance period for a definitive determination on the achievability of this credit.



MRc5 – Sustainable Purchasing: Food



At A Glance

- Policy
- Low Cost
- Portfolio-wide
- Calculation
- Measurement & Verification

Credit Highlights

- Data from all residents is desirable for credit achievability
- Practices can still be employed by residents & property management to improve sustainable purchasing at the property



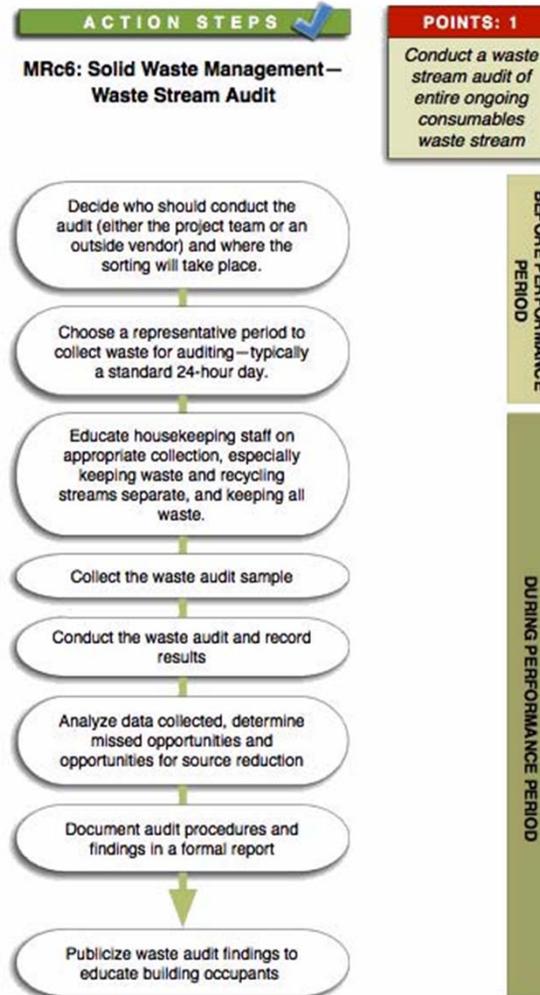
Status	C	A	S	L	N
Points	0	0	0	0	1

MRc5 | Sustainable Purchasing: Food

Intent	To reduce the environmental and transportation impacts associated with food production and distribution
Financial Impact	LOW COST
Comments	<ul style="list-style-type: none"> • The submittal for this credit requires purchasing data for the entire building, inclusive of all residents. • Due to the tremendous commitment and cooperation required from residents, this credit is slated as not achievable at this point. Nevertheless, the next steps recommended below are expected to improve the overall health and well-being of the residents. • Food production and distribution on site includes the Golden Diners program and a vending machine in the common area. • Credit eligible for exemplary performance if sustainable food and beverage purchases account for 50% or more of the total cost over the performance period.
Next Steps	<p>Performance Period</p> <ul style="list-style-type: none"> • Consider working with Resident Services to develop a sustainable food purchasing program for third party food vendors. • Data tracking and final calculation is required at the end of the performance period for a definitive determination on the achievability of this credit. <p>CHA Involvement</p> <ul style="list-style-type: none"> • Inform the residents on the benefits of purchasing local and sustainable food.



MRc6 – Solid Waste Management: Waste Stream Audit



At A Glance

- Policy
- Low Cost
- Portfolio-wide
- Calculation
- Measurement & Verification

Credit Highlights

- Waste haulers can perform the audit

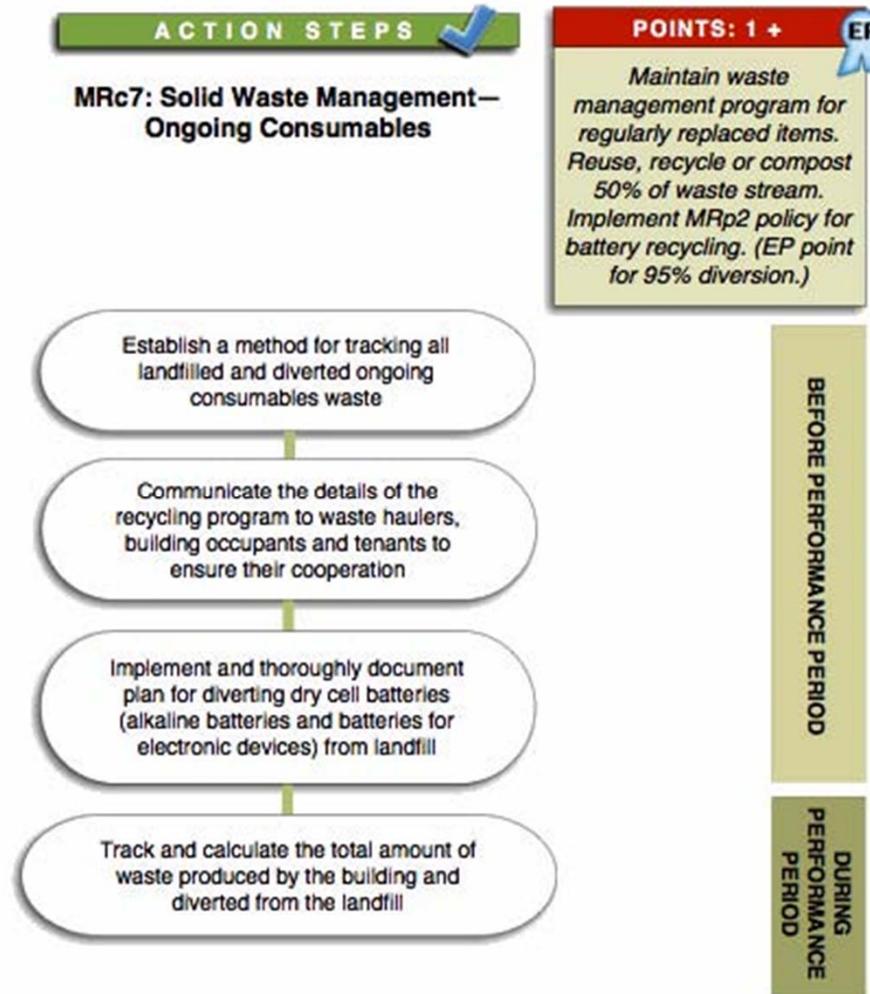
Status	C	A	S	L	N
Points	0	0	1	0	0

MRc6 | Solid Waste Management: Waste Stream Audit

Intent	To facilitate the reduction of ongoing waste and toxins generated by building occupants and building operations that are hauled to and disposed of in landfills or incineration facilities
Financial Impact	LOW COST - depending on agreement and scheduling with the property's current waste hauler.
Comments	<ul style="list-style-type: none"> · A waste stream audit has not been conducted for this property. · A full audit is required during the performance period. If an audit is not part of existing contract, additional costs should be anticipated.
Next Steps	<p>Performance Period</p> <ul style="list-style-type: none"> · Engage the property's waste hauler, an independent consultant or in-house personnel to conduct a waste stream audit. · Data tracking and final calculation is required at the end of the performance period for a definitive determination on the achievability of this credit. <p>CHA Resident Involvement</p> <ul style="list-style-type: none"> · Inform the residents of the current amounts of different waste streams each month and suggest behavioral changes to reduce waste.



MRc7 – Solid Waste Management: Ongoing Consumables



At A Glance

- Policy
- Low Cost
- Portfolio-wide
- Calculation
- Measurement & Verification

Credit Highlights

- Existing CHA recycling program will be used with an increased emphasis on education & training

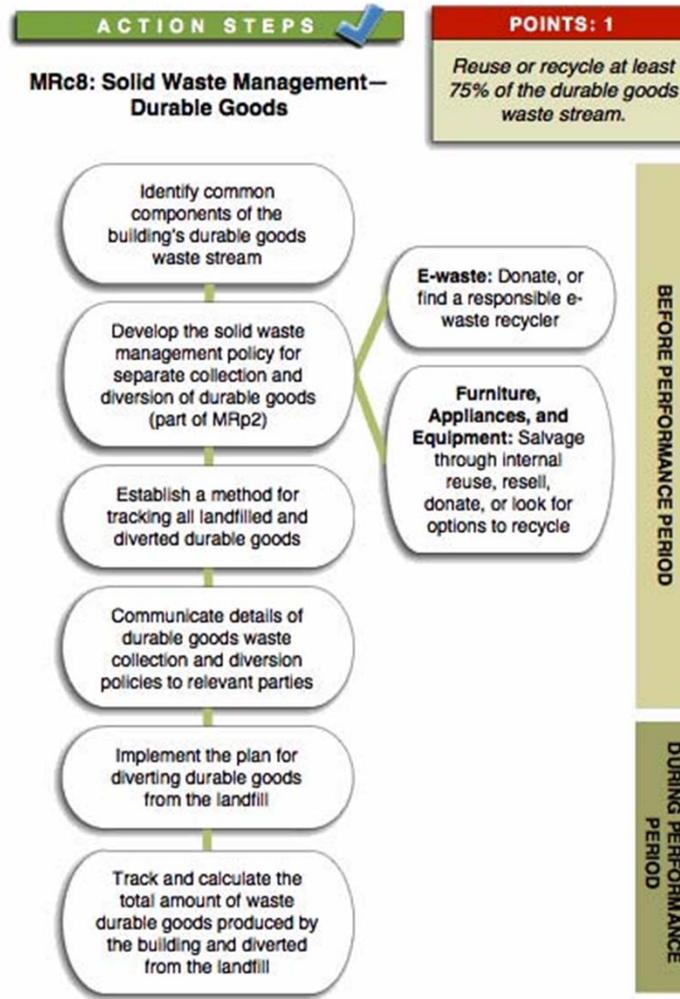
Status	C	A	S	L	N
Points	0	0	1	0	0

MRc7 | Solid Waste Management: Ongoing Consumables

Intent	To facilitate the reduction of waste and toxins generated from the use of ongoing consumable products by building occupants and building operations that are hauled to and disposed of in landfills or incineration facilities
Financial Impact	LOW COST
Comments	<ul style="list-style-type: none"> · Of the 7% response rate to the Resident Survey, only 16% of those responded that they are either currently recycling or interested in doing so. · Currently, the property does not have a recycling program in place. · Some materials may be considered either durable goods or ongoing consumables provided consistency is maintained with MRc8 with no contradictions, exclusions or double counting. Consistency must also be maintained with MRc1 and MRc2.
Next Steps	<p>Performance Period</p> <ul style="list-style-type: none"> · Achievability of the credit depends on the successful implementation and documentation of the Solid Waste Management Policy created in MRp2 and located in the revised CHA PPMP Manual for ongoing consumables for the residents and management office. · Data tracking and final calculation of waste and recyclables is required at the end of the performance period for a definitive determination on the achievability of this credit. <p>CHA Involvement</p> <ul style="list-style-type: none"> · Keep residents informed about the success of the Recycling Plan for CHA Developments through the Resource Center, set goals for constant improvement, and offer incentives to participate. · Encourage residents to learn about the benefits of composting. · Consider participating to the Call2Recycle® Program (see Recommended Resources for more details), a free rechargeable battery and cell phone collection program in North America. Call2Recycle.com



MRc8 – Solid Waste Management: Durable Goods



At A Glance

- Policy
- Low Cost
- Portfolio-wide
- Calculation
- Measurement & Verification

Credit Highlights

- Because most durable electronic goods are CHA-owned, this credit could be achieved in the short term

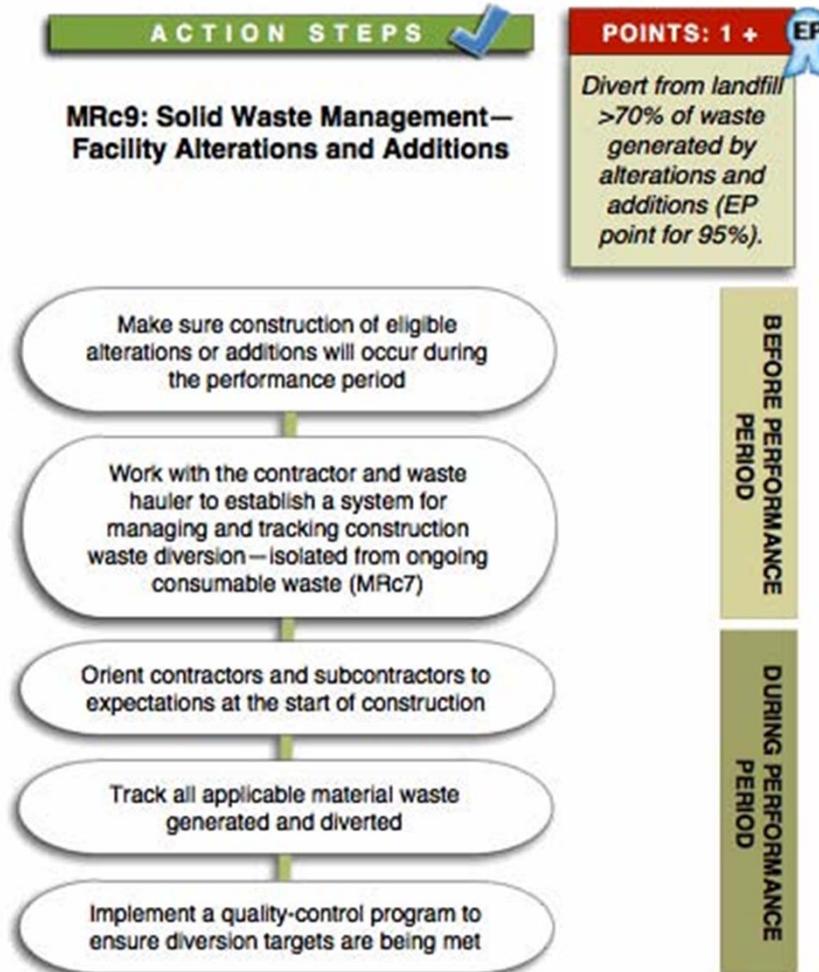
Status	C	A	S	L	N
Points	0	0	1	0	0

MRc8 | Solid Waste Management: Durable Goods

Intent	To facilitate the reduction of waste and toxins generated from the use of durable goods by building occupants and building operations that are hauled to and disposed of in landfills or incineration facilities
Financial Impact	LOW COST
Comments	<ul style="list-style-type: none"> · The current waste hauler for the property has a detailed tracking system that may aid in the documentation of this credit. · Most durable goods used on site are items that are purchased and maintained by management for use in the management office, resident apartments or common areas. · Some materials may be considered either durable goods or ongoing consumables provided consistency is maintained with MRc7 with no contradictions, exclusions or double counting. Consistency must also be maintained with MRc1 and MRc2.
Next Steps	<p>Performance Period</p> <ul style="list-style-type: none"> · Achievability of the credit depends on the successful implementation and documentation of the Solid Waste Management Policy created in MRp2 and located in the revised CHA PPMP Manual for durable goods for the residents and management office. · Data tracking and final calculation is required at the end of the performance period for a definitive determination on the achievability of this credit. <p>CHA Involvement</p> <ul style="list-style-type: none"> · Keep occupants informed about the success of the durable goods recycling program, set goals for constant improvement, and offer incentives to participate.



MRc9 – Solid Waste Management: Facility Alterations & Additions



At A Glance

- Policy
- Low Cost
- Portfolio-wide
- Calculation
- Measurement & Verification

Credit Highlights

- This credit is only achievable if facility alterations & additions occur during the performance period

Status	C	A	S	L	N
Points	0	0	1	0	0

MRc9 | Solid Waste Management: Facility Alterations & Additions

Intent	To divert construction and demolition waste from disposal to landfills and incineration facilities. Redirect recyclable recovered resources to the manufacturing process. Redirect reusable materials to appropriate sites.
Financial Impact	LOW COST
Comments	<ul style="list-style-type: none"> · This credit can only be pursued if a facility alteration or addition occurs during the performance period. · Credit eligible for exemplary performance by diverting 95% or more of waste generated by facility alterations and additions from disposal to landfills and incineration facilities.
Next Steps	<p>Performance Period</p> <ul style="list-style-type: none"> · Achievability of the credit depends on the successful implementation and documentation of the Solid Waste Management Policy created in MRp2 and located in the revised CHA PPMP Manual for facility alterations and additions. · Coordinate any future facility alterations and additions to occur within the timeframe of the performance period. · Data tracking and final calculation is required at the end of the performance period for a definitive determination on the achievability of this credit.



INDOOR ENVIRONMENTAL QUALITY

- Improve Ventilation
- Manage Air Contaminants
- Implement Green Cleaning
- Allow Occupants to Control Desired Settings
- Provide Daylighting & Views

INDOOR ENVIRONMENTAL QUALITY CHECKLIST

LEED EBOM 2009 Project Checklist

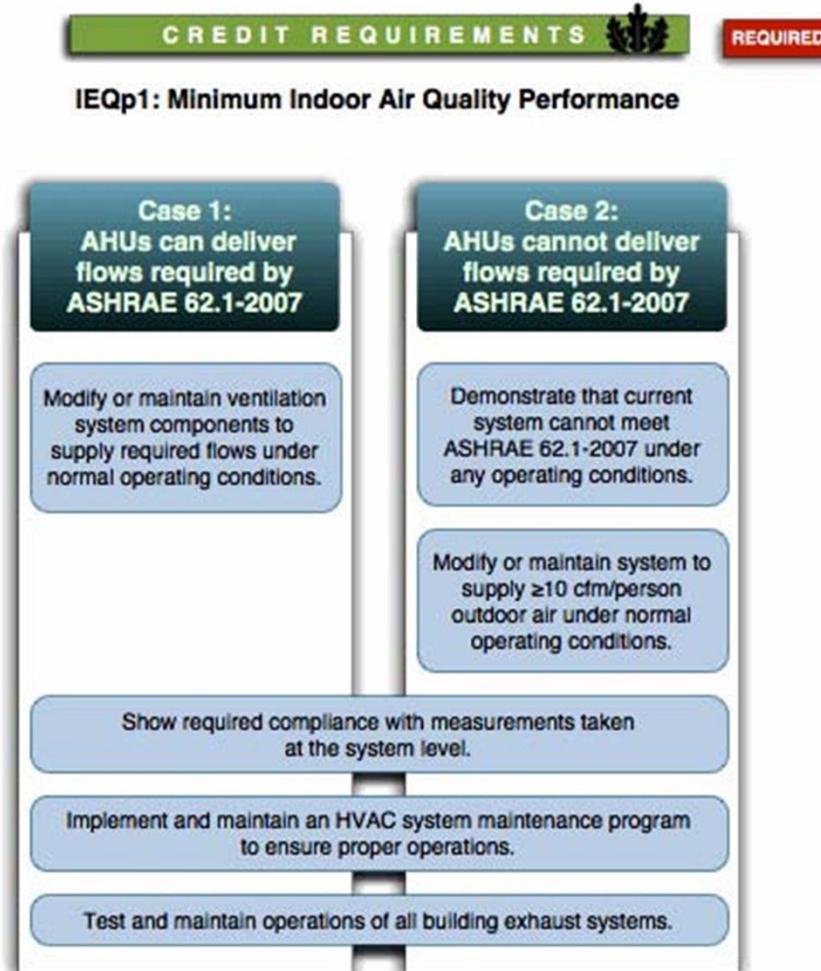
Currently Compliant	Achievable	Short-Term	Long-Term	Not Achievable
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Total Possible Points

Indoor Environmental Quality

<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IEQp1 Minimum IAQ Performance	<input type="text" value=""/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IEQp2 Environmental Tobacco Smoke (ETS) Control	<input type="text" value=""/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IEQp3 Green Cleaning Policy	<input type="text" value=""/>
<input type="checkbox"/>	IEQc1.1 IAQ Best Management Practices: IAQ Management Program	<input type="text" value="1"/>				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	IEQc1.2 IAQ Best Management Practices: Outdoor Air Delivery Monitoring	<input type="text" value="1"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IEQc1.3 IAQ Best Management Practices: Increased Ventilation	<input type="text" value="1"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IEQc1.4 IAQ Best Management Practices: Reduce Particulates in Air Distribution	<input type="text" value="1"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IEQc1.5 IAQ Best Management Practices: IAQ Management for Facility Additions and Alterations	<input type="text" value="1"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IEQc2.1 Occupant Comfort: Occupancy Survey	<input type="text" value="1"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IEQc2.2 Controllability of Systems: Lighting	<input type="text" value="1"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	IEQc2.3 Occupancy Comfort: Thermal Comfort Monitoring	<input type="text" value="1"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IEQc2.4 Daylight and Views	<input type="text" value="1"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IEQc3.1 Green Cleaning: High Performance Cleaning Program	<input type="text" value="1"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IEQc3.2 Green Cleaning: Custodial Effectiveness Assessment	<input type="text" value="1"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IEQc3.3 Green Cleaning: Purchase of Sustainable Cleaning Products & Materials	<input type="text" value="1"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IEQc3.4 Green Cleaning: Sustainable Cleaning Equipment	<input type="text" value="1"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IEQc3.5 Green Cleaning: Indoor Chemical and Pollutant Source Control	<input type="text" value="1"/>
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	IEQc3.6 Green Cleaning: Indoor Integrated Pest Management	<input type="text" value="1"/>
<input checked="" type="checkbox"/>	Total 15 Points Possible	<input type="text" value="15"/>				

IEQp1 - Minimum Indoor Air Quality Performance



At A Glance

- No Cost
- Portfolio-wide
- Calculation
- Measurement & Verification

Credit Highlights

- Natural ventilation found in most residential buildings aids this credit



Status	<input type="button" value="C"/>	<input checked="" type="button" value="A"/>	<input type="button" value="S"/>	<input type="button" value="L"/>	<input type="button" value="N"/>
Points	<input type="text" value=""/>	<input checked="" type="text" value="X"/>	<input type="text" value=""/>	<input type="text" value=""/>	<input type="text" value=""/>

IEQp1 | Minimum Indoor Air Quality Performance

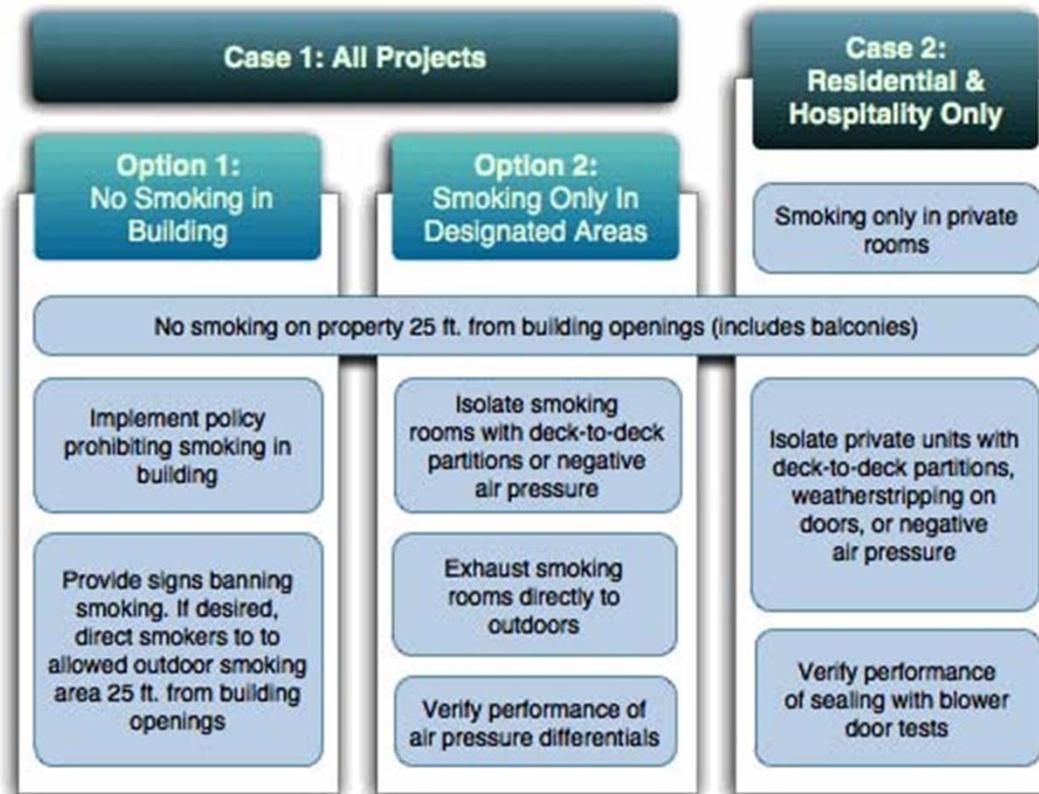
Intent	To establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in buildings, thus contributing to the health and well-being of the occupants
Financial Impact	NO COST
Comments	<ul style="list-style-type: none"> · All prerequisites must be met to be qualified for any level of LEED certification. · The management offices and the residential units all have natural ventilation. The operable area in the sampling of spaces observed is estimated to be in compliance with ASHRAE 62.1-2007 Section 5.1, meaning operable windows are at least 4% of the floor area and spaces are within 25 feet of the operable windows.
Next Steps	<ul style="list-style-type: none"> · This preliminary analysis need to be expanded for the entire building by collecting the necessary data for each operable window and space area in residential units and common areas.



IEQp2 - Environmental Tobacco Smoke (ETS) Control

CREDIT REQUIREMENTS  **REQUIRED**

IEQp2: Environmental Tobacco Smoke Control



At A Glance

- Policy
- Low Cost
- Portfolio-wide
- Measurement & Verification

Credit Highlights

- City of Chicago prohibits smoking within 15' of entry point
 - LEED requires 25'
- Doors leading from residences to hallways must be weather-stripped

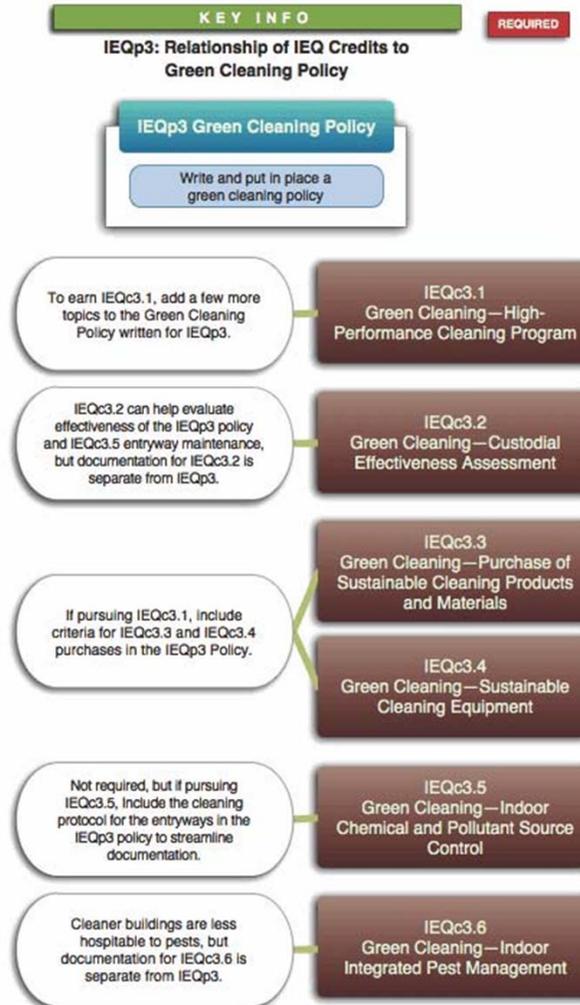
Status	<input type="button" value="C"/>	<input type="button" value="A"/>	<input checked="" type="button" value="S"/>	<input type="button" value="L"/>	<input type="button" value="N"/>
Points	<input type="text"/>	<input type="text"/>	<input type="text" value="X"/>	<input type="text"/>	<input type="text"/>

IEQp2 | Environmental Tobacco Smoke (ETS) Control

Intent	To prevent or minimize exposure of building occupants, indoor surfaces, and systems to environmental tobacco smoke (ETS).
Financial Impact	LOW COST - related to the weather stripping and blower test.
Comments	<ul style="list-style-type: none"> · All prerequisites must be met to be qualified for any level of LEED certification. · CHA has a no-smoking policy in all common areas of the building and has signs posted on the Resident Communication Boards at the management office and individual resident floors. · Smoking is allowed in residential units, and Resident Survey data confirms that residents do smoke in their units. · CHA conforms to the Smoke-Free Illinois Act and has signs posted that prohibit smoking within 15 feet of any entry point, which is 10 feet less than the LEED EBOM requirement.
Next Steps	<ul style="list-style-type: none"> · Achievability of the prerequisite depends on the successful implementation of the Environmental Tobacco Smoke Control Policy located in the revised CHA PPMP Manual before the performance period begins. · Weather-strip all doors in the residential units leading to common hallways to minimize leakage before the performance period begins.



IEQp3 – Green Cleaning Policy



At A Glance

- Policy
- No Cost
- Portfolio-wide

Credit Highlights

- Green cleaning methods lower occupant’s health risks & promote healthy living

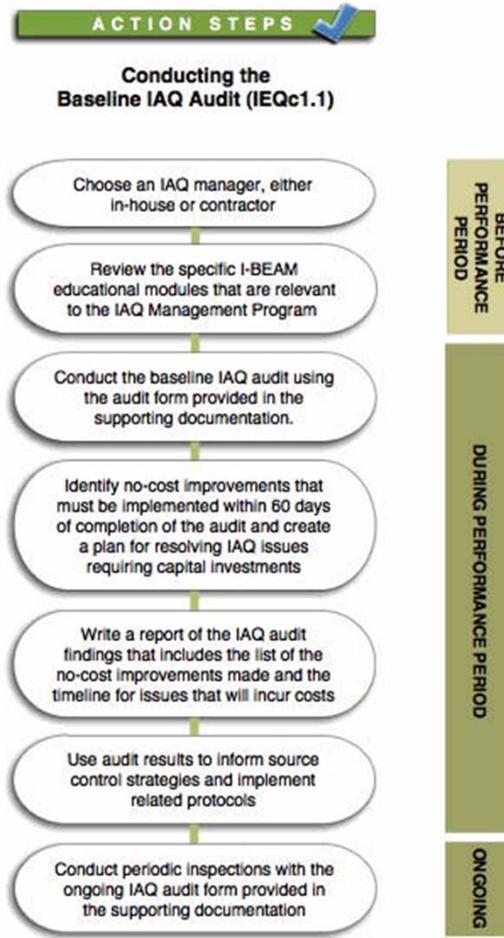
Status	<input type="checkbox"/> C	<input checked="" type="checkbox"/> A	<input type="checkbox"/> S	<input type="checkbox"/> L	<input type="checkbox"/> N
Points	<input type="checkbox"/>	<input checked="" type="checkbox"/> X	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

IEQp3 | Green Cleaning Policy

Intent	To reduce the exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological, and particulate contaminants, which adversely affect air quality, human health, building finishes, building systems, and the environment.
Financial Impact	NO COST
Comments	<ul style="list-style-type: none"> · All prerequisites must be met to be qualified for any level of LEED certification. · All chemicals and janitorial equipment is currently stored in the compactor room on the first floor, which is separately ventilated. Chemical concentrates are mixed at the same location as well. · Management holds monthly safety trainings regarding proper cleaning procedures and equipment usage.
Next Steps	<ul style="list-style-type: none"> · Achievability of the prerequisite depends on the successful implementation and documentation of the Green Cleaning Policy located in the revised CHA PPMP Manual. · Current documentation of janitorial practices will need to be updated, refined and reformatted for conformance to submission requirements.



IEQc1.1 – IAQ Best Management Practices: IAQ Management Program



At A Glance

- Policy
- Moderate Cost
- Portfolio-wide
- Measurement & Verification

Credit Highlights

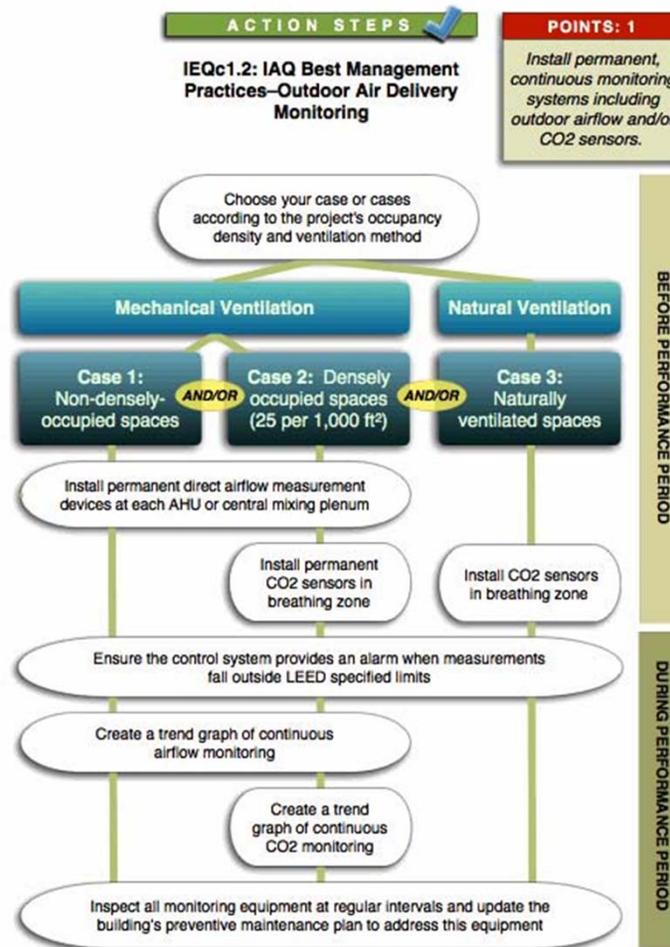
- EPA I-BEAM provides the guidelines for creating property-specific plan

Status	C	A	S	L	N
Points	0	0	1	0	0

IEQc1.1 | IAQ Best Management Practices: IAQ Management Program

Intent	To enhance indoor air quality (IAQ) by optimizing practices to prevent the development of indoor air quality problems in buildings, correcting indoor air quality problems when they occur, and maintaining the well-being of the occupants.
Financial Impact	MODERATE COST - associated with contractor fees to perform IAQ audit and report. Costs can be reduced if the audit is performed in-house.
Comments	<ul style="list-style-type: none"> · An IAQ survey that meets the intent of the EPA's I-BEAM (see Recommended Resources for more details) protocol has not been conducted for the building.
Next Steps	<p>Performance Period</p> <ul style="list-style-type: none"> · Assign an internal IAQ Manager to be responsible for developing and implementing the management program, maintaining contracts for IAQ-related services and communicating about IAQ issues with the building's occupants. · Hire a contractor or utilize the IAQ Manager to perform I-BEAM audit and develop protocols to manage pollutant sources referenced in I-BEAM including: Remodeling and renovation, painting, pest control, and shipping/receiving. Refer to the revised CHA PPMP Manual for guidance on creating and implementing an Indoor Air Quality Management Program. · For all issues with no cost to resolve, provide a log confirming remediation in 60 days; for issues with a cost involved, provide a timeline and strategy for remediation.

IEQc1.2 – IAQ Best Management Practices: Outdoor Air Delivery Monitoring



At A Glance

- High Cost
- Property-specific
- Measurement & Verification

Credit Highlights

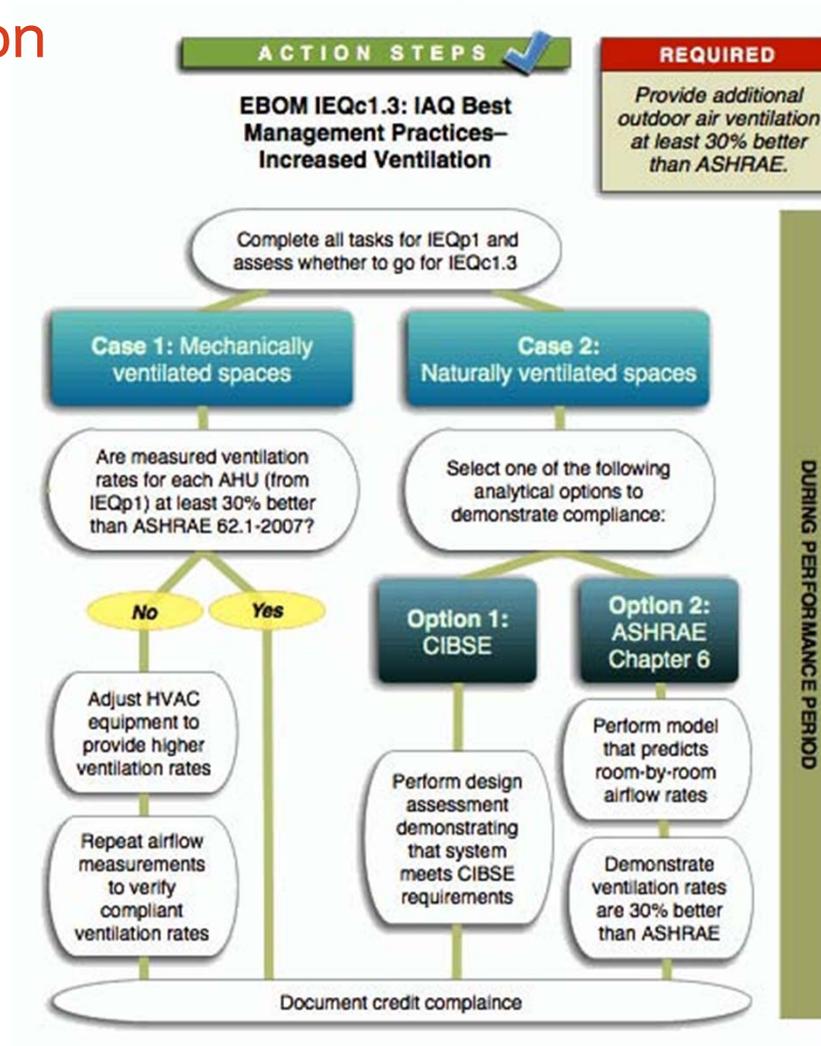
- Each unit & naturally ventilated zone requires an individual CO₂ sensor

Status	C	A	S	L	N
Points	0	0	0	1	0

IEQc1.2 | IAQ Best Management Practices: Outdoor Air Delivery Monitoring

Intent	To provide capacity for ventilation system monitoring to help sustain occupants' comfort and well-being
Financial Impact	HIGH COST - due to CO ₂ sensors for all 482 units and each naturally ventilated zones of the commons areas.
Comments	<ul style="list-style-type: none"> · All Outside Air introduction is achieved by natural ventilation. In order to meet the requirements, CO₂ sensors would need to be placed in the breathing zone of every naturally ventilated zone that is greater than 150 square feet. The sensors would need to produce an audible or visible alarm if the CO₂ levels are greater than 530ppm above outdoor air CO₂ levels or 1000 absolute.
Next Steps	<ul style="list-style-type: none"> · Install CO₂ sensors that produce an audible or visual alarm as described above in all rooms greater than 150 square feet. · Track calibration and maintenance of installed CO₂ sensors.

IEQc1.3 – IAQ Best Management Practices: Increased Ventilation



At A Glance

- Low Cost
- Portfolio-wide
- Measurement & Verification

Credit Highlights

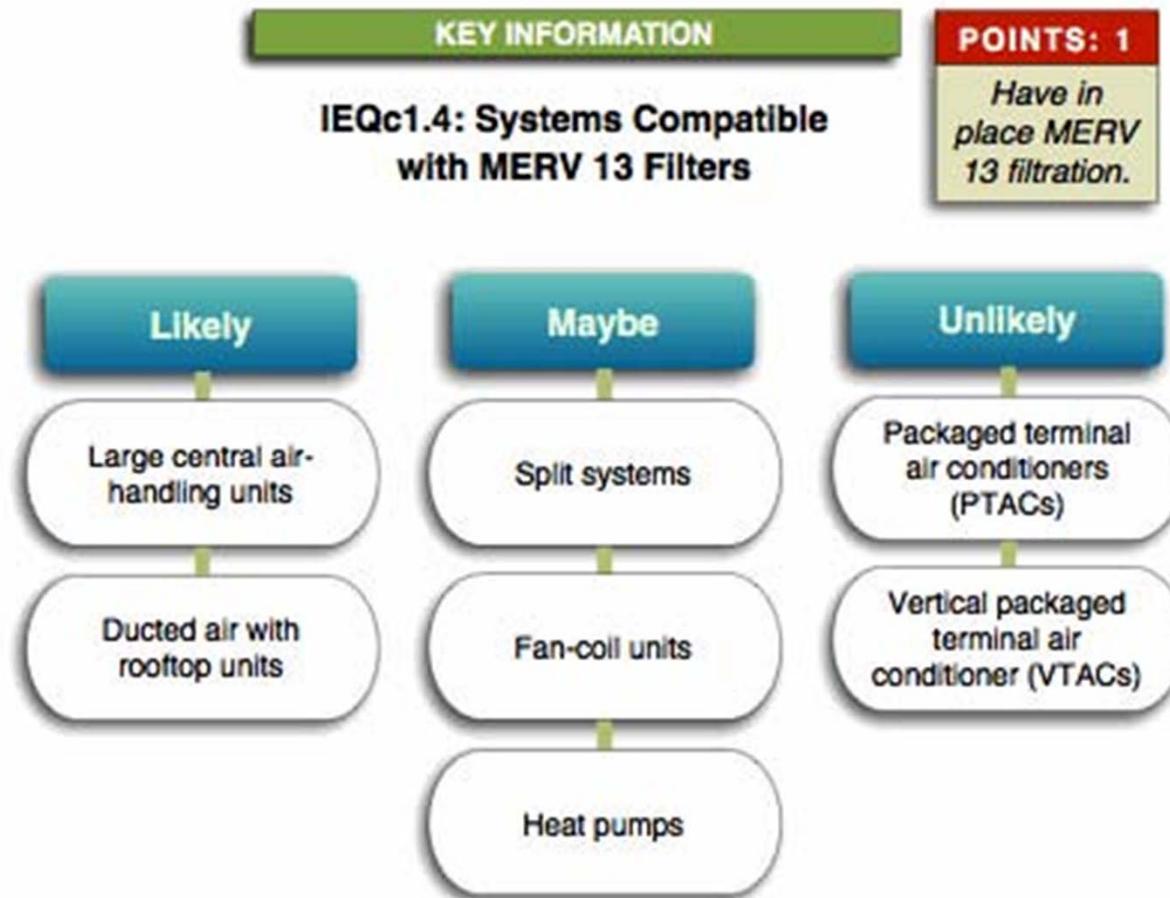
- Natural ventilation and extreme seasonal temperature shifts in Chicago prevent pursuit of credit

Status	C	A	S	L	N
Points	0	0	0	0	1

IEQc1.3 | Best Management Practices: Increased Ventilation

Intent	To provide additional outdoor air ventilation to improve indoor air quality for occupants' comfort, well-being, and productivity.
Financial Impact	LOW COST - associated with contractor fees for model.
Comments	<ul style="list-style-type: none"> · Of the 7% response rate to the Resident Survey, 72% of those residents reported frequently opening their windows to allow for natural ventilation. · All occupied spaces are naturally ventilated. In order to show compliance with this credit, the flow diagram in CIBSE Applications Manual 10:2005 must be followed The project will not meet this requirement due to extreme seasonal temperature shifts that exist in Chicago. · If the project does meet the CIBSE Applications Manual, an air flow modeling must be completed to show the proper amount of outside air are reaching 90% of occupied spaces. · Credit eligible for Regional Priority (additional 1 point).
Next Steps	<ul style="list-style-type: none"> · Currently slated as a not achievable credit pending a decision on complete rehabilitation of the current system. <p>CHA Involvement</p> <ul style="list-style-type: none"> · Inform the residents on the benefits of natural ventilation when possible.

IEQc1.4 – IAQ Best Management Practices: Reduce Particulates in Air Distribution



At A Glance

- Property-specific

Credit Highlights

- Residential AC units are not sized to accommodate MERV 13 filters
- Filters for common area systems may be upgraded to MERV 13 to reduce particulates without gaining LEED points

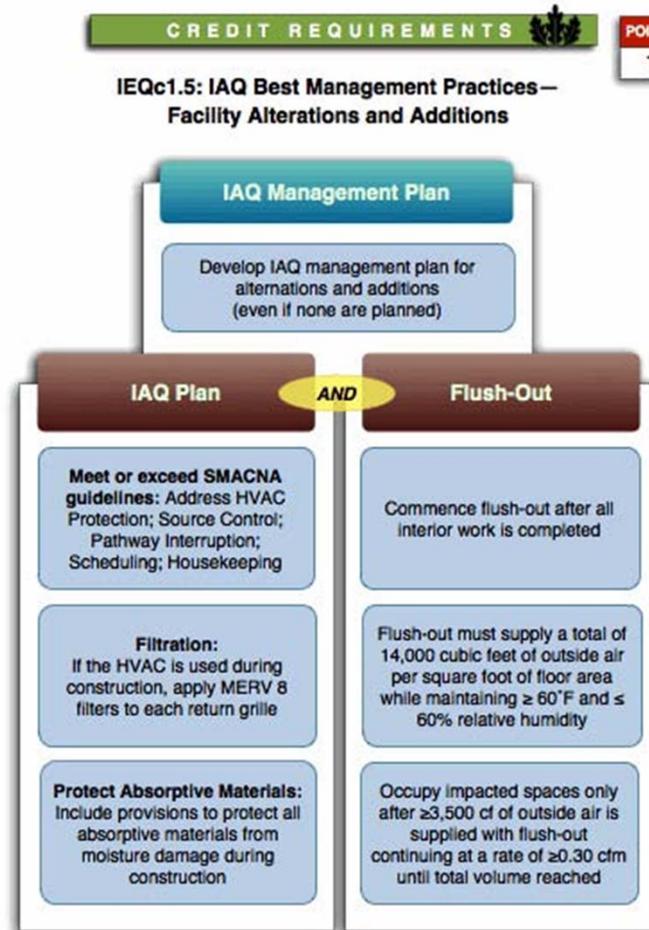
Status	C	A	S	L	N
Points	0	0	0	0	1

IEQc1.4 | Best Management Practices: Reduce Particulates in Air Distribution

Intent	To reduce exposure of building occupants and maintenance personnel to potentially hazardous particulate contaminants, which adversely affect air quality, human health, building finishes, building systems, and the environment.
Financial Impact	N/A
Comments	<ul style="list-style-type: none"> · MERV 13 filters are not used on the AC units. · The current equipment is not currently sized to handle MERV 13 filtration and would be impossible to accommodate.
Next Steps	<ul style="list-style-type: none"> · Currently slated as a not achievable credit pending a decision on complete rehabilitation of the current system.



IEQc1.5 – IAQ Best Management Practices: IAQ Management for Facility Alterations & Additions



At A Glance

- Portfolio-wide
- Measurement & Verification

Credit Highlights

- Require tenant floors to be unoccupied after construction for about 10 days for a **flush out**

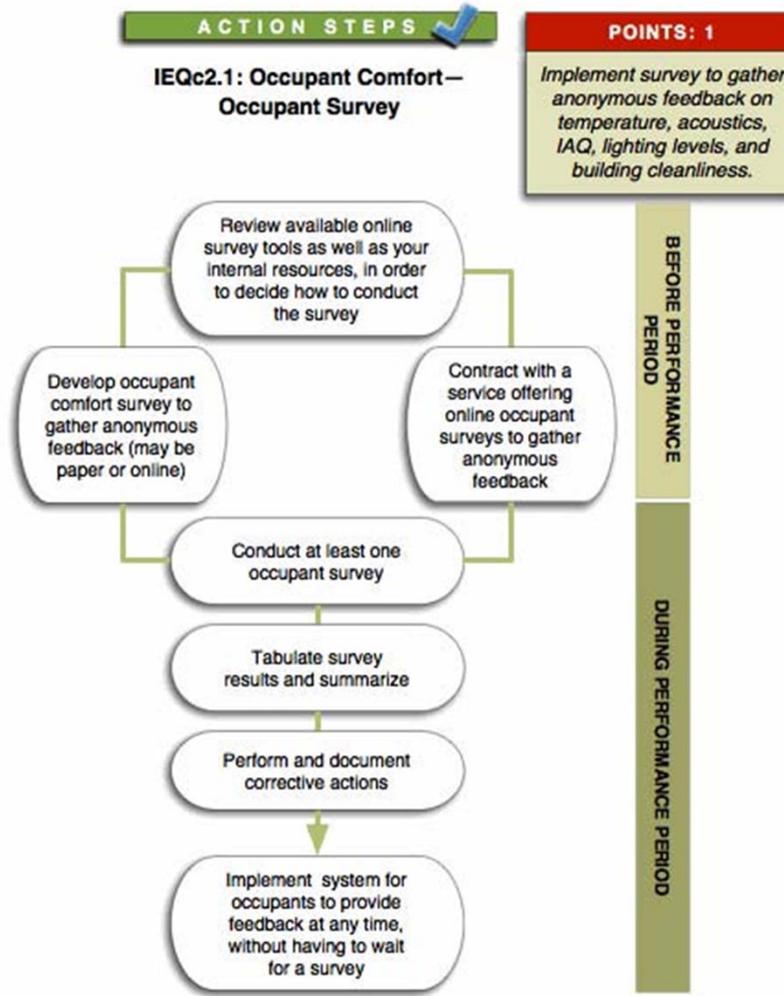
Status	C	A	S	L	N
Points	0	0	0	0	1

IEQc1.5 | Best Management Practices: IAQ Management for Facility Alterations &

Additions

Intent	To prevent indoor air quality problems resulting from any construction or renovation projects and thus help sustain the comfort and well-being of construction workers and building occupants.
Financial Impact	N/A
Comments	<ul style="list-style-type: none"> · To meet the flush-out period required by SMACNA a typical floor would be required to be unoccupied after construction for approximately 10 days. This flow rate is dependent on the area of the renovation and the amount of outdoor air that is available to that space.
Next Steps	<ul style="list-style-type: none"> · Slated as not achievable due to the flush out requirements of the credit.

IEQc2.1 - Occupant Comfort: Occupant Survey



At A Glance

- Low Cost
- Portfolio-wide
- Measurement & Verification

Credit Highlights

- Initial resident survey responses help to gauge feasibility of credit
- Requires **30%** response rate
- Requires corrective actions if **20%** or more of residents are dissatisfied



13. Is there a smell/odor in the common areas (laundry room, community room, lobby areas)?

yes no

If yes, what is the frequent source:

food smoke paint

carpet/furniture cleaning products

other: _____

14. How is the water pressure in your shower?

good too low too high

15. How quickly are leaks fixed in your home?

same day next day 1 week longer than 1 week

16. If you have mold present in your home, how much mold is present in your bathroom & kitchen (wet areas)?

a lot a little none

Status	C	A	S	L	N
Points	0	0	1	0	0

IEQc2.1 | Occupant Comfort: Occupant Survey

Intent	To provide for the assessment of building occupants' comfort as it relates to thermal comfort, acoustics, indoor air quality, lighting levels, building cleanliness, and any other comfort issues.
Financial Impact	LOW COST
Comments	<ul style="list-style-type: none"> • Out of 346 occupied units, a total of 25 residents were available and provided responses to the Green Property Assessment Survey, achieving a 7% response rate. LEED EBOM requires a response rate of 30%.

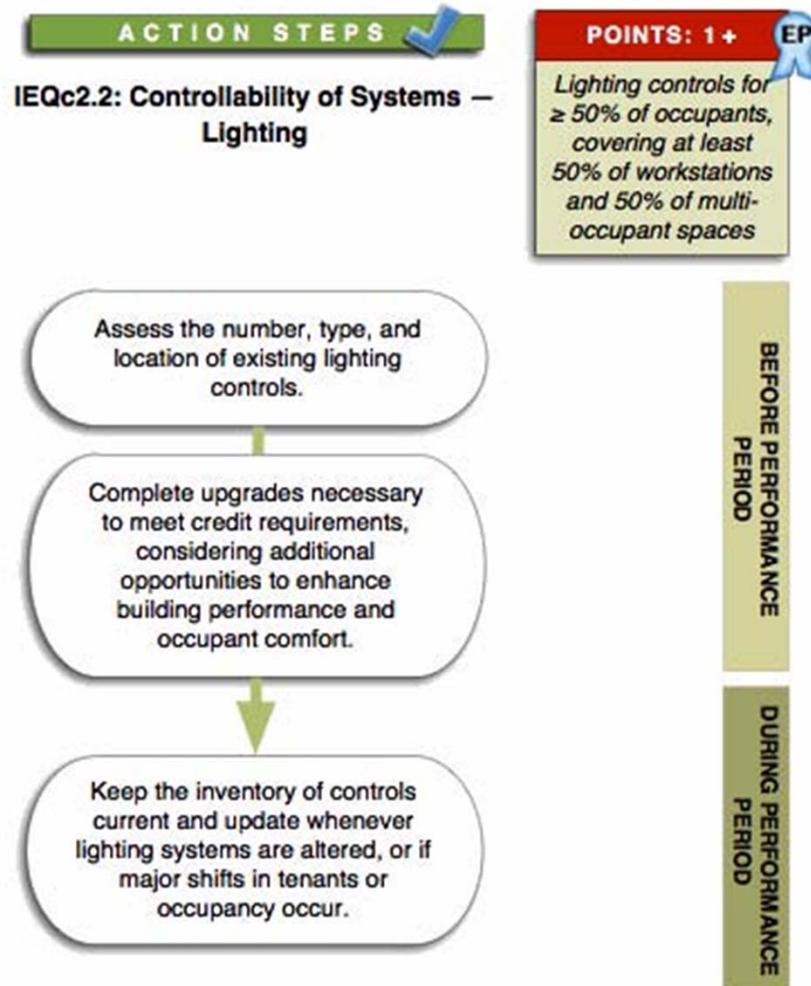
- The survey should address thermal comfort, acoustics, IAQ, lighting levels and building cleanliness. The Resident Survey given by the project team addresses some of these issues, but a more comprehensive survey of the residents will need to occur during the **performance period**.
- Of the 7% response rate to the resident survey data, thermal comfort was assessed as follows:
 - In summer,
 - Only 68% reported that they were satisfied with the thermal comfort in the common areas, and
 - Only 48% of those residents reported that they were satisfied with the thermal comfort in the units.
 - In winter,
 - Only 68% reported that they were satisfied with the thermal comfort in the common areas, and
 - Only 52% of those residents reported that they were satisfied with the thermal comfort in the units.

Next Steps

Performance Period

- Conduct at least one occupant survey during the performance period that achieves a 30% response rate.
- Corrective actions must be undertaken during the performance period whenever 20% of respondents indicate dissatisfaction with an element of building comfort.
- Data tracking and documentation of the corrective actions are required during the performance period for a definitive determination on the achievability of this credit. [com](#)

IEQc2.2 – Occupant Comfort: Occupant Controlled Lighting



At A Glance

- No Cost
- Portfolio-wide
- Measurement & Verification

Credit Highlights

- Residential building types have an advantage in achieving the credit and exemplary performance

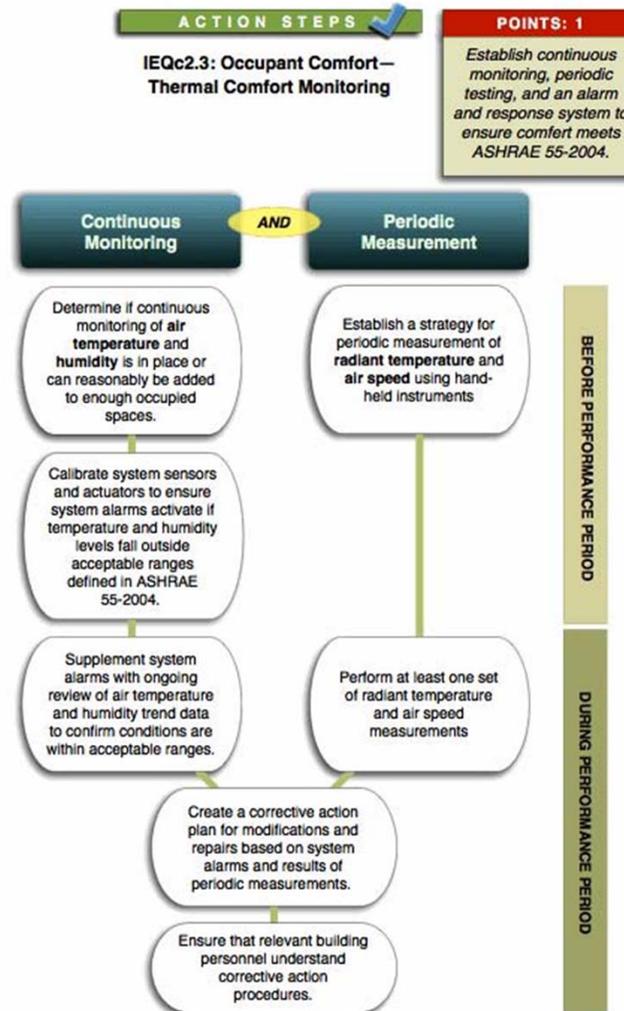


Status	C	A	S	L	N
Points	1	0	0	0	0

IEQc2.2 | Occupant Comfort: Occupant Controlled Lighting

Intent	To provide a high level of lighting control by individual occupants or specific groups in multi-occupant spaces (e.g., classrooms or conference areas) to promote the productivity, comfort, and well-being of building occupants
Financial Impact	NO COST
Comments	<ul style="list-style-type: none"> · All residential units have individual controls for each lighting fixture. Individual offices in the management office have individual control via light switches. · Credit eligible for exemplary performance for projects that achieve 95% occupant-controlled lighting in both individual units and common areas.
Next Steps	<ul style="list-style-type: none"> · Intent of this credit has been met.

IEQc2.3 – Occupant Comfort: Thermal Comfort Monitoring



At A Glance

- High Cost
- Portfolio-wide
- Measurement & Verification

Credit Highlights

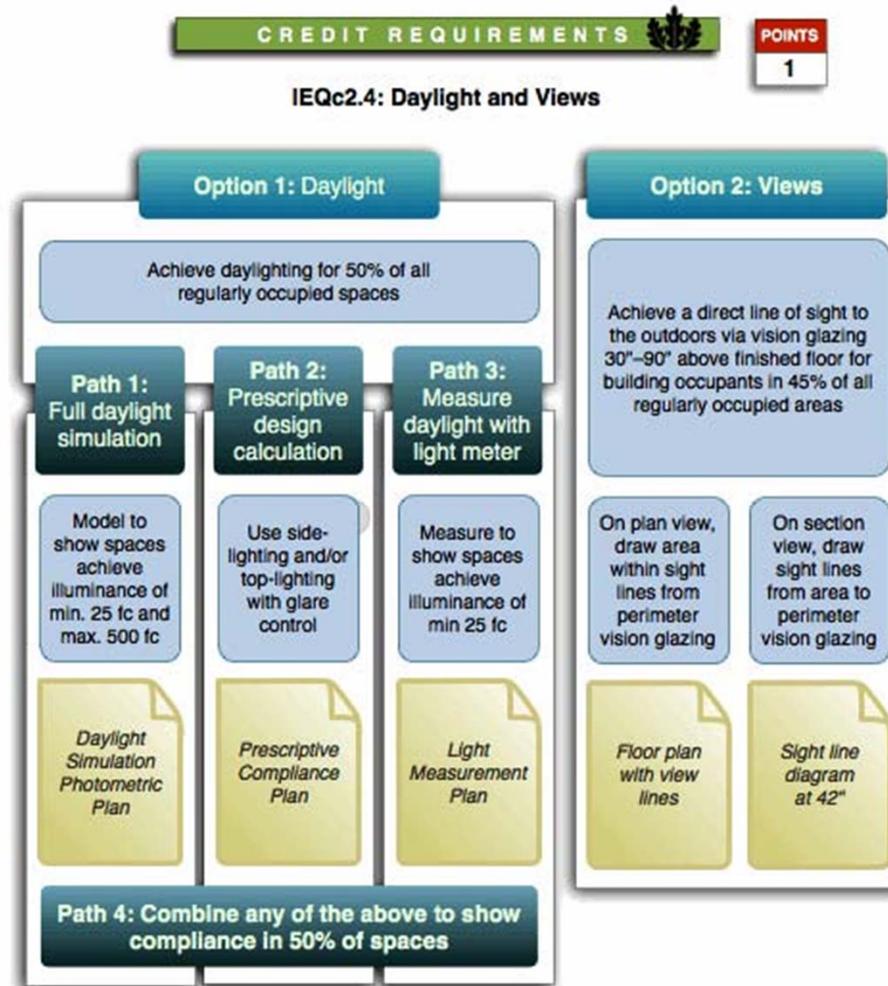
- Central boiler systems prevent individual occupant control

Status	C	A	S	L	N
Points	0	0	0	0	1

IEQc2.3 | Occupant Comfort: Thermal Comfort Monitoring

Intent	To support the appropriate operations and maintenance of buildings and building systems so that they continue to meet target building performance goals over the long term and provide a comfortable thermal environment that supports the productivity and well-being of building occupants.
Financial Impact	HIGH COST - due to complete rehabilitation of the current system and installation of BAS system in order to monitor temperature and humidity.
Comments	<ul style="list-style-type: none"> · Each unit only has control in the cooling mode via wall mounted AC units. · Residents have radiant floor heating but do not currently have control of heating space temperature in their units. · No BAS system exists. Temperature is not monitored in each apartment and humidity is not monitored in each major building zone. · Air speed and mean radiant temperature are not tested periodically
Next Steps	<ul style="list-style-type: none"> · Currently slated as a not achievable credit pending a decision on complete rehabilitation of the current system and installation of a Building Automation System (BAS), which is a prerequisite of this credit.

IEQc2.4 - Daylight & Views



At A Glance

- Low Cost
- Portfolio-wide
- Measurement & Verification

Credit Highlights

- CHA window standards are likely LEED compliant



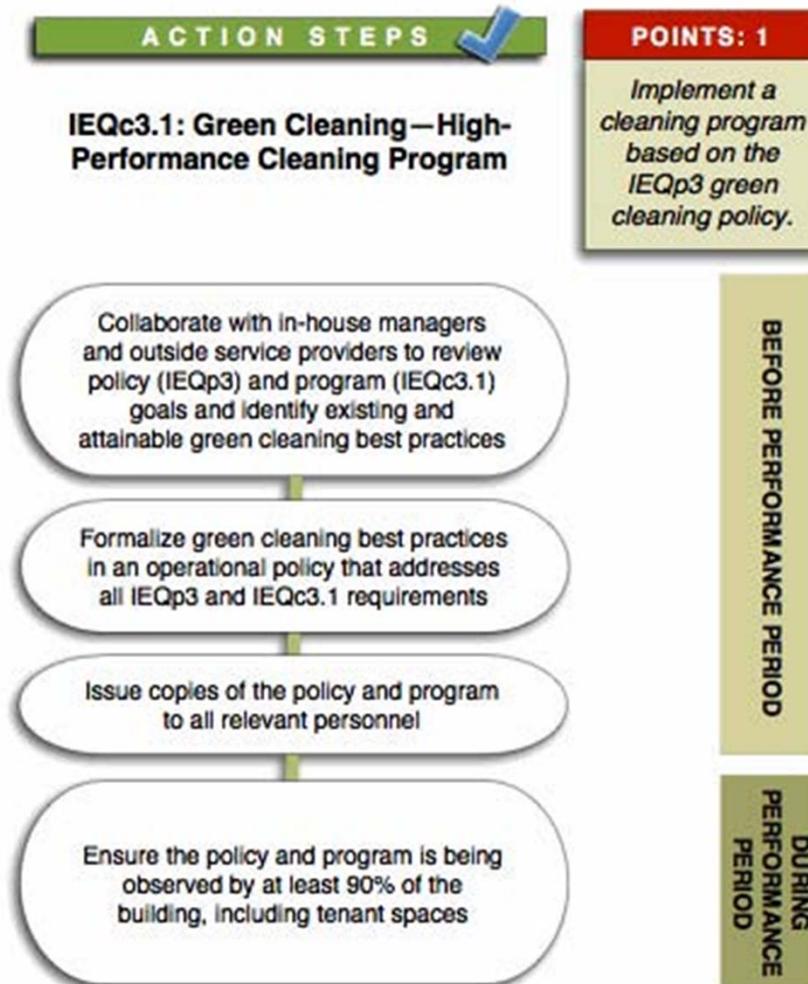
Status	C	A	S	L	N
Points	0	0	1	0	0

IEQc2.4 | Daylight & Views

Intent	To provide a connection between indoor spaces and the outdoor environment through use of daylight and views in the occupied areas of the building
Financial Impact	LOW COST
Comments	<ul style="list-style-type: none"> · On-site observations of the common areas and residential units determined adequate daylight and views for the majority of spaces. · Credit eligible for exemplary performance when 2% daylight factor in 75% of spaces occupied for critical visual tasks and/or direct line of sight to vision glazing for 90% of building occupants in regularly occupied spaces is achieved.
Next Steps	<ul style="list-style-type: none"> · Compliance is anticipated in the short term pending more detailed calculations of each regularly occupied space on the property.



IEQc3.1 – Green Cleaning: High Performance Cleaning Program



At A Glance

- Policy
- Low Cost
- Portfolio-wide
- Measurement & Verification

Credit Highlights

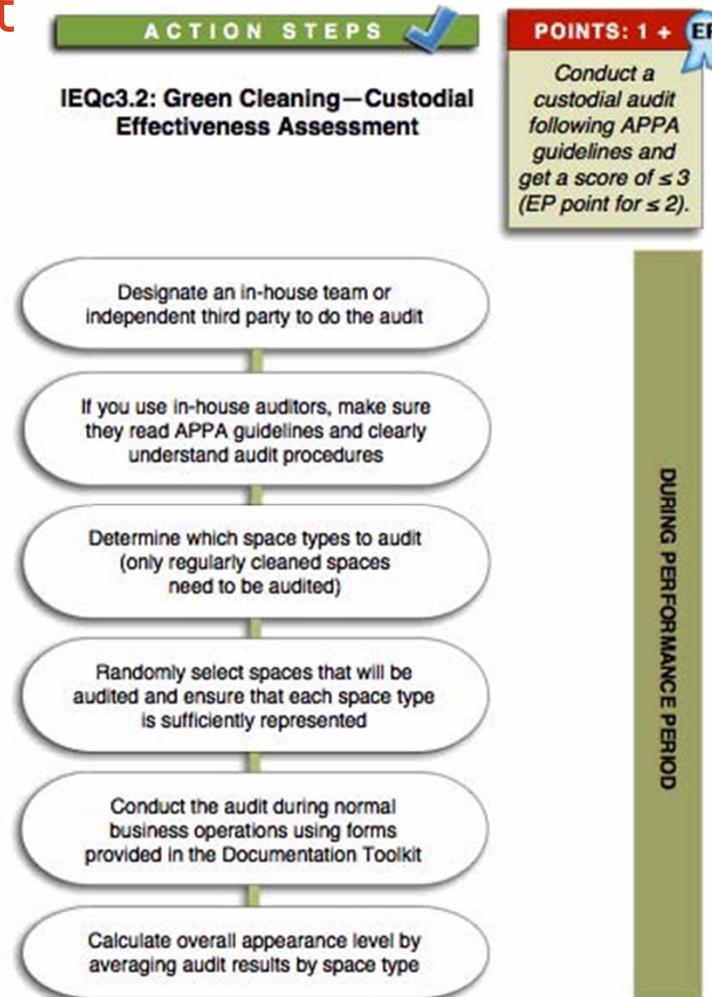
- Training & documentation of cleaning program is essential
 - Expand on current training requirements
 - Utilize existing data tracking system (YARDI)

Status	C	A	S	L	N
Points	0	0	1	0	0

IEQc3.1 | Green Cleaning: High Performance Cleaning Program

Intent	To reduce the exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological, and particulate contaminants, which adversely affect air quality, human health, building finishes, building systems, and the environment.
Financial Impact	LOW COST - due to materials, products and equipment that may need to be replaced
Comments	<ul style="list-style-type: none"> · Of the 7% response rate to the resident survey data, 68% of those residents cited food, smoke, and cleaning products being a frequent source of odor in the common areas. · CHA currently has an online issue tracking system (YARDI) in place for cleaning issues. This system may aid in documenting credit requirements. · Maintenance staff is currently trained monthly on proper cleaning procedures. · After a policy has been developed it can take time before all items/actions outlined in it are implemented. This credit is about rewarding buildings that have their green cleaning program fully in place. Later credits reward partial fulfillment. · Refer to IEQp3, IEQc3.4-3.6 and IEQc3.7 for additional information.
Next Steps	<p>Performance Period</p> <ul style="list-style-type: none"> · Achievability of the credit depends on the successful implementation of the Green Cleaning Policy detailed in the revised CHA PPMP Manual for maintenance personnel training and sustainable product sourcing. · Consider assessing and improving CHA's online issue tracking system (YARDI) for green practices that would contribute to achieving related credit requirements.

IEQc3.2 – Green Cleaning: Custodial Effectiveness Assessment



At A Glance

- Policy
- Low Cost
- Portfolio-wide
- Measurement & Verification

Credit Highlights

- **76%** of residents reported satisfactory overall building maintenance
- Establishing a formal evaluation system will benefit all stakeholders

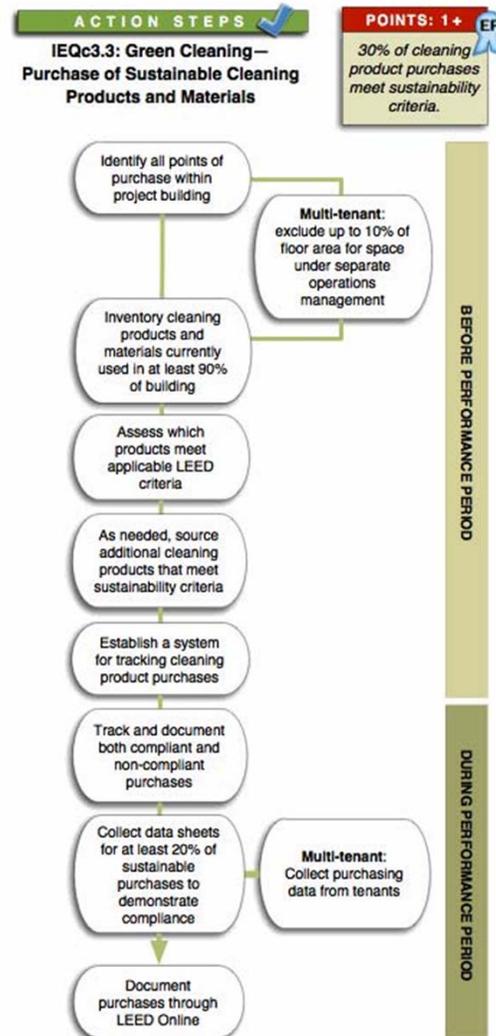
Status	C	A	S	L	N
Points	0	0	1	0	0

IEQc3.2 | Green Cleaning: Custodial Effectiveness Assessment

Intent	To reduce the exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological, and particulate contaminants, which adversely affect air quality, human health, building finishes, building systems, and the environment, by implementing, managing, and auditing cleaning procedures and processes.
Financial Impact	LOW COST - due to the hiring of a third party auditor and the number of improvements necessary
Comments	<ul style="list-style-type: none"> · Of the 7% response rate to the Resident Survey, 76% of those residents reported satisfactory overall building maintenance. · The facility must score 3 or less on a scale of 5. <ul style="list-style-type: none"> Level 1 - Orderly Spotlessness Level 2 - Ordinary Tidiness Level 3 - Casual Inattention Level 4 - Moderate Dinginess Level 5 - Unkempt Neglect · CHA currently has an online issue tracking system (YARDI) in place for cleaning issues. This system may aid in documenting credit requirements.
Next Steps	<p>Performance Period</p> <ul style="list-style-type: none"> · Conduct an audit in accordance with APPA Leadership in Educational Facilities' Custodial Staffing Guidelines (see Recommended Resources for more details) to determine the appearance level of the facility.



IEQc3.3 – Green Cleaning: Purchase of Sustainable Cleaning Products & Materials



At A Glance

- Policy
- Low Cost
- Portfolio-wide
- Calculation
- Measurement & Verification

Credit Highlights

- CHA will determine acceptable “premium” for green cleaning products
 - Some EcoLogo products are in use



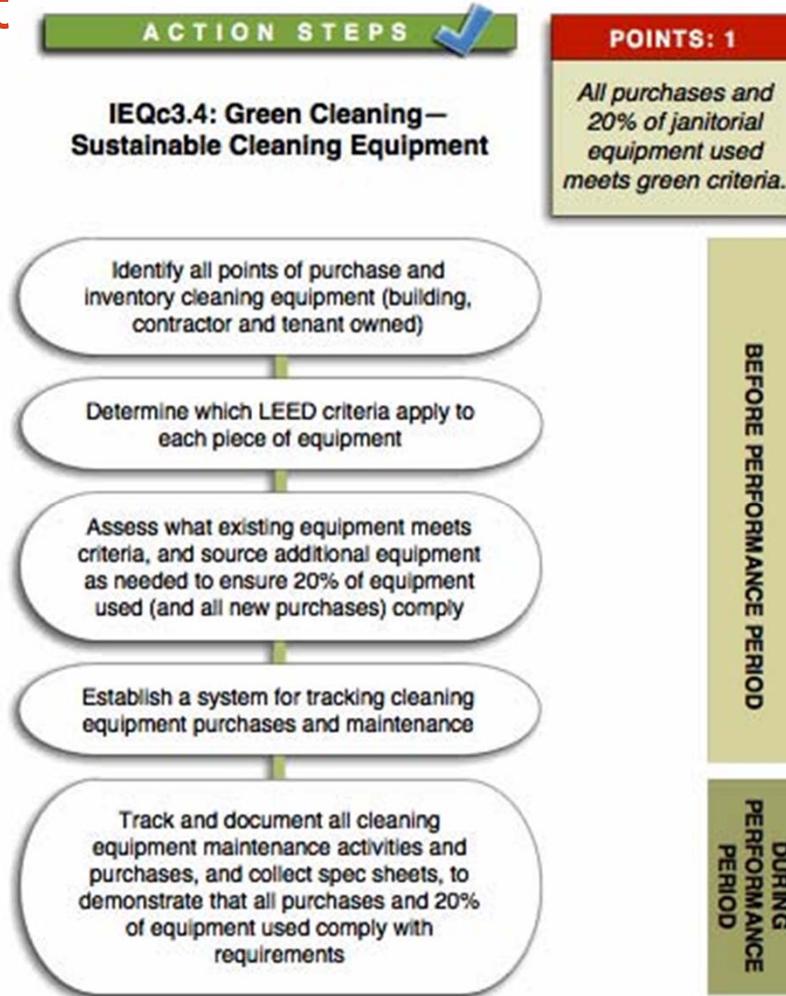
Status	C	A	S	L	N
Points	0	0	1	0	0

IEQc3.3 | Green Cleaning: Purchase of Sustainable Cleaning Products & Materials

Intent	To reduce the environmental impacts of cleaning products, disposable janitorial paper products, and trash bags.
Financial Impact	LOW COST - based on quantity of materials and products that requires revision and if there is a cost premium for compliant products
Comments	<ul style="list-style-type: none"> · The submittal for this credit requires purchasing data for the entire building, inclusive of all residents. Tremendous commitment and cooperation from residents is therefore required. · A selection of EcoLogo products are already in use. · Materials and products must be purchased during the performance period to earn points in this credit. · All Material Safety Data Sheets are kept on site and up to date. · Credit eligible for exemplary performance when 60% or more of the total annual purchases of these products meets at least one of the required criteria for this credit
Next Steps	<p>Performance Period</p> <ul style="list-style-type: none"> · Achievability of the credit depends on the successful implementation and documentation of the Green Cleaning Policy for the purchase of sustainable cleaning products and materials that can be found in the revised CHA PPMP Manual. · Consider using products and materials that are also produced locally. · Data tracking and documentation of cleaning product and material purchases is required during the performance period for a definitive determination on the achievability of this credit.



IEQc3.4 – Green Cleaning: Sustainable Cleaning Equipment



At A Glance

- Policy
- Low Cost
- Portfolio-wide
- Calculation
- Measurement & Verification

Credit Highlights

- Formal logging of equipment maintenance is required
- If new equipment is needed, purchase according to sustainability criteria

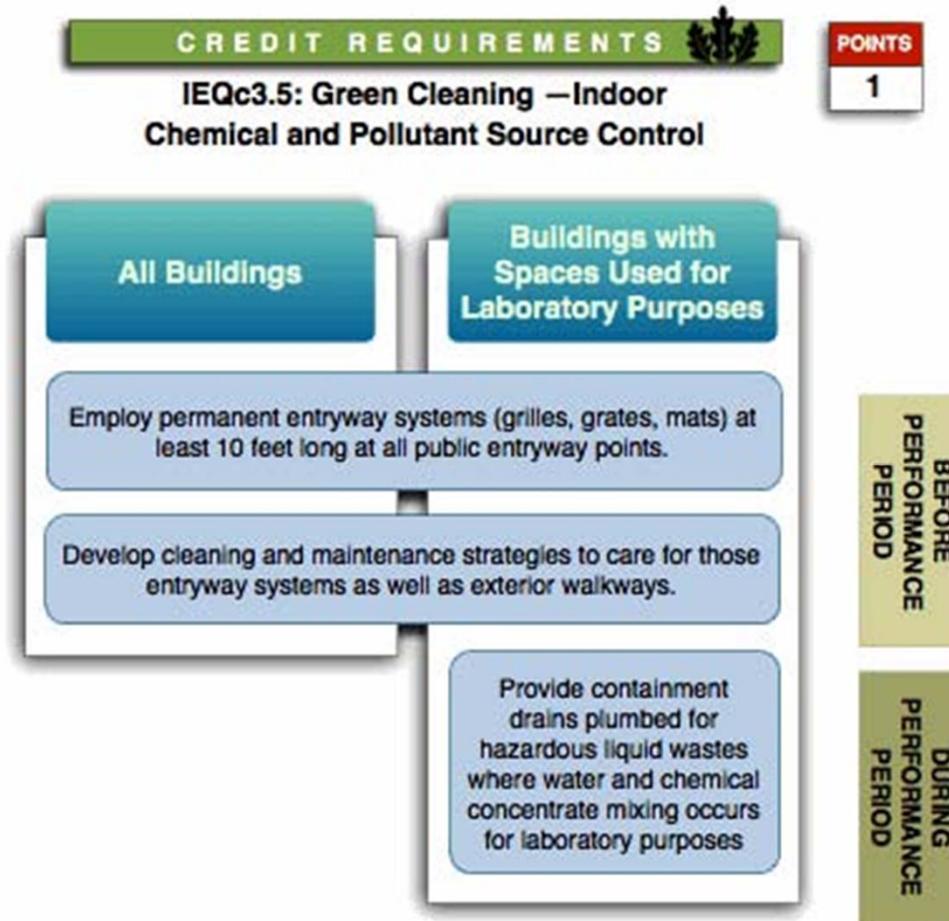
Status	C	A	S	L	N
Points	0	0	1	0	0

IEQc3.4 | Green Cleaning: Sustainable Cleaning Equipment

Intent	To reduce the exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological, and particulate contaminants, which adversely affect air quality, human health, building finishes, building systems and the environment, from powered cleaning equipment
Financial Impact	LOW COST - depending on equipment that needs to be replaced.
Comments	<ul style="list-style-type: none"> · A log is not kept onsite for the purchase, repair and maintenance of the powered cleaning equipments, and there is no standard for information transfer during management company turnover.
Next Steps	<p>Performance Period</p> <ul style="list-style-type: none"> · Achievability of the credit depends on the successful implementation and documentation of the Green Cleaning Policy for the purchase, use and maintenance of sustainable cleaning equipment that can be found in the revised CHA PPMP Manual. · Purchase powered cleaning equipment that meets the sustainability criteria. At least 20% of the total janitorial equipment (by number or cost) must meet at least one of the sustainability criteria to achieve this credit. · Staff training on operation of new equipment may be required. · Maintain a continuous inventory of all cleaning equipment purchased and used on the property including a repair and maintenance log with vendor specification sheets for each type of equipment in use. · Data tracking and final calculation is required at the end of the performance period for a definitive determination on the achievability of this credit.



IEQc3.5 – Green Cleaning: Indoor Chemical and Pollutant Source Control



At A Glance

- Policy
- Low Cost
- Portfolio-wide

Credit Highlights

- **10'** entryway systems required
- Walk-off mat vendor contract needs to be updated per LEED requirements



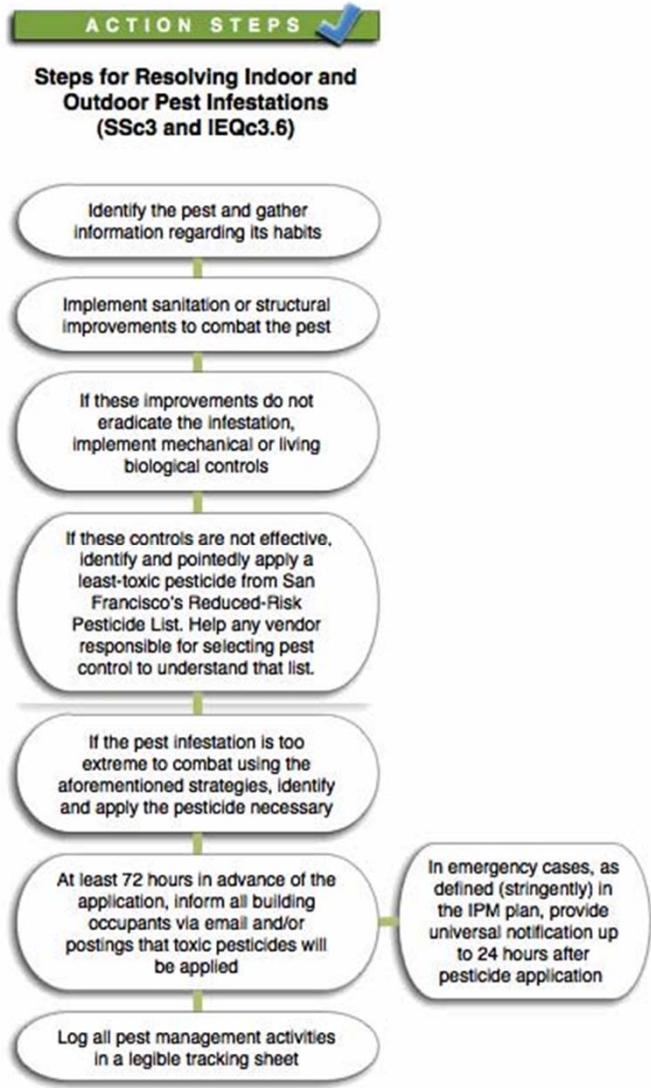
Status	C	A	S	L	N
Points	1	0	0	0	0

IEQc3.5 | Green Cleaning: Indoor Chemical and Pollutant Source Control

Intent	To reduce the exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological, and particulate contaminants, which adversely affect air quality, human health, building finishes, building systems, and the environment.
Financial Impact	LOW COST - Cost increase would result from extended duration and maintenance of installed mats
Comments	<ul style="list-style-type: none"> · Walk off mat is present in the vestibule area and is installed year round. · The entryway area has the required 10' of space. · The entryway area is mopped and vacuumed daily.
Next Steps	<p>Performance Period</p> <ul style="list-style-type: none"> · Achievability of the credit depends on the successful implementation of the Green Cleaning Policy for entryway cleaning systems outlined in the revised CHA PPMP Manual. · Investigate opportunities to reduce/correct sources of tracked-in materials (i.e. salt, snow, mud, dirt, sand, leaves, etc.) · Project team and custodial provider to update contract, if necessary. · Document and track cleaning strategies for the exterior and interior of entryways, general maintenance of entryway systems, and cleaning during inclement weather.



IEQc3.6 – Green Cleaning: Indoor Integrated Pest Management (IPM)



At A Glance

- Policy
- Low Cost
- Portfolio-wide
- Measurement & Verification

Credit Highlights

- Notification period needs to extend from 48 hours to 72 hours prior to pesticide application
- Existing vendor is LEED compliant
 - Must establish documentation, measurement & verification chain

Status	C	A	S	L	N
Points	0	1	0	0	0

IEQc3.6 | Green Cleaning: Indoor Integrated Pest Management (IPM)

Intent	To reduce the exposure of building occupants and maintenance personnel to potentially hazardous chemical, biological, and particulate contaminants that adversely affect air quality, human health, building finishes, building systems, and the environment.
Financial Impact	LOW COST - depending on amount of revisions to current pest management practices (i.e. increased monitoring, pesticide alternatives).
Comments	<ul style="list-style-type: none"> · IPM requires routine inspection and monitoring and the property already performs routine inspection and monitoring for pest control. The pest management contractor treats each unit quarterly and will treat additional units upon request. · The property currently distributes notices to residents 48 hours prior to pest treatment, which is 24 hours shorter than the LEED EBOM requirement. · Of the 7% response rate to the Resident Survey: <ul style="list-style-type: none"> - Only 60% of those residents reported that they are notified of when their building or residence will be exterminated. - Bed bugs have been found on site. · Management sends out notices describing proper preparation for bed bug treatment. Infected units are typically treated and retreated again within 10 days.
Next Steps	<p>Performance Period</p> <ul style="list-style-type: none"> · Achievability of the credit depends on the successful implementation and documentation of the Indoor Integrated Pest Management Plan that is outlined in the revised CHA PPMP Manual. · Notify residents a minimum of 72 hours prior to pest treatment. · Maintain a pesticide application log and establish record-keeping procedures for pest monitoring locations. · Inform and train staff regarding the policy changes.



THANK YOU

David W. Anderson, CEM
Chicago Housing Authority
e: DaAnderson@thecha.org
p: 312.913.7704

Susan Heinking, MArch, AIA, NCARB
LEED AP O+M
HOK
e: Susan.Heinking@hok.com
p: 312.254.5306

Isilay Civan, MSc, PHD²
LEED AP O+M
HOK
e: Isilay.Civan@hok.com
p: 312.254.5374