



Road Map To Success: LEED Case Studies

Course Description

Imagine this scenario: skyscrapers that breathe sustainability, neighborhoods that pulsate with community vibrancy, and cities that hum with innovation. This is the future we envision. Through a captivating blend of in-depth case studies, insightful analyses of proven practices, and visionary examination of cutting-edge ideas, we'll uncover the strategies to transform the built environment using LEED.

From pioneering sustainable infrastructure to office renovations, every lesson is a step closer to unlocking the potential of our cities. Together, we'll deconstruct LEED v4 BD+C and ID+C strategies, learning from the triumphs and challenges of those who dared to reshape the urban landscape. So, if you're ready to go beyond blueprints and embrace the art of urban metamorphosis, join us as we embark on a journey to redefine what's possible in the built environment.



Learning Objectives

- Discuss LEED v4 BD+C and ID+C sustainable design strategies by reviewing building case studies that promote environmental and human health
- Describe LEED v4 BD+C and ID+C credits that elevate sustainable design projects and help reduce global warming potential and toxic materials for buildings
- Examine LEED v4 BD+C and ID+C strategies that reduce construction waste, promote renewable energy, and support local communities
- Review how LEED can address significant environmental challenges within the construction industry and beyond





BOSTON PUBLIC MARKET

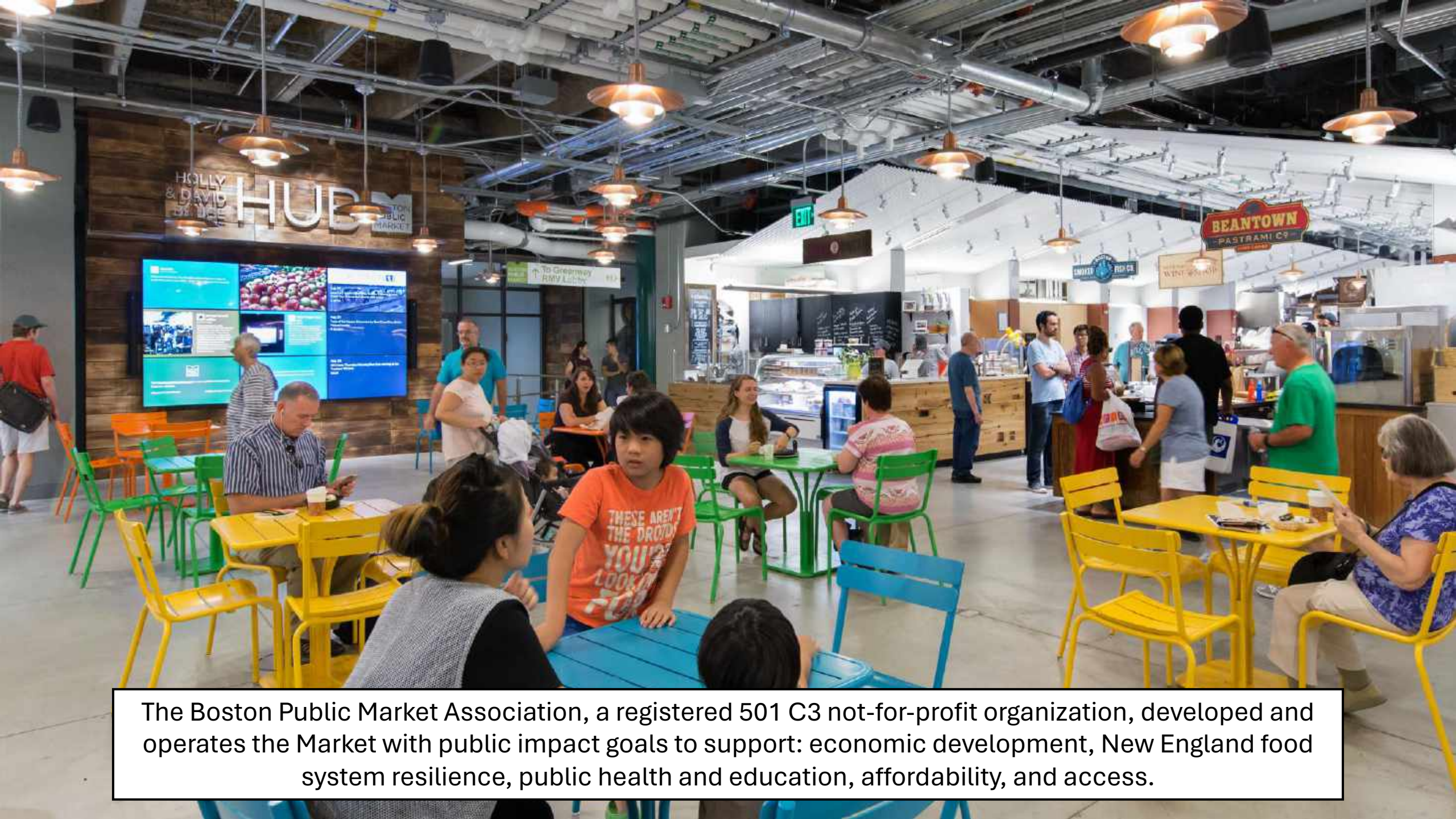
CONGRESS ST

HANOVER ST

NO RIGHT TURN
TRUCKS & BUSES



The Market is a civic, community-building space for farmers, fishers, food entrepreneurs, neighbors, customers, and partners who come together around the common culture of food.



The Boston Public Market Association, a registered 501 C3 not-for-profit organization, developed and operates the Market with public impact goals to support: economic development, New England food system resilience, public health and education, affordability, and access.



Diversity, Inclusion, and Equity is grounded in the Boston Public Market's mission to cultivate a diverse community around food.



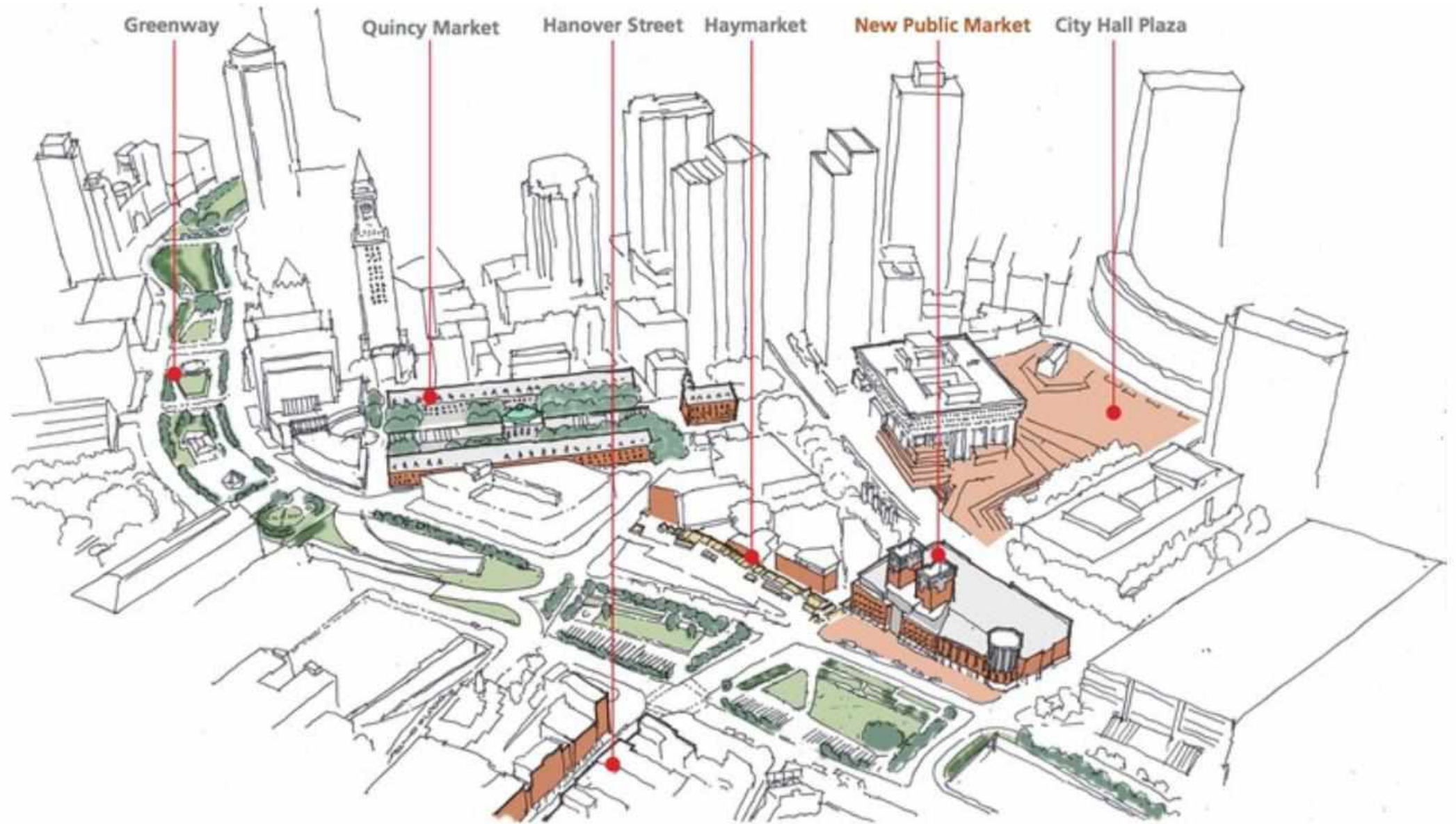
The market strives to identify the barriers, in particular for small business owners of color, and be thoughtful about methods in which the Boston Public Market can contribute to mitigating those roadblocks.



The design of the Boston Public Market, the first year-round indoor public market in the country to prioritize local, sustainable food.

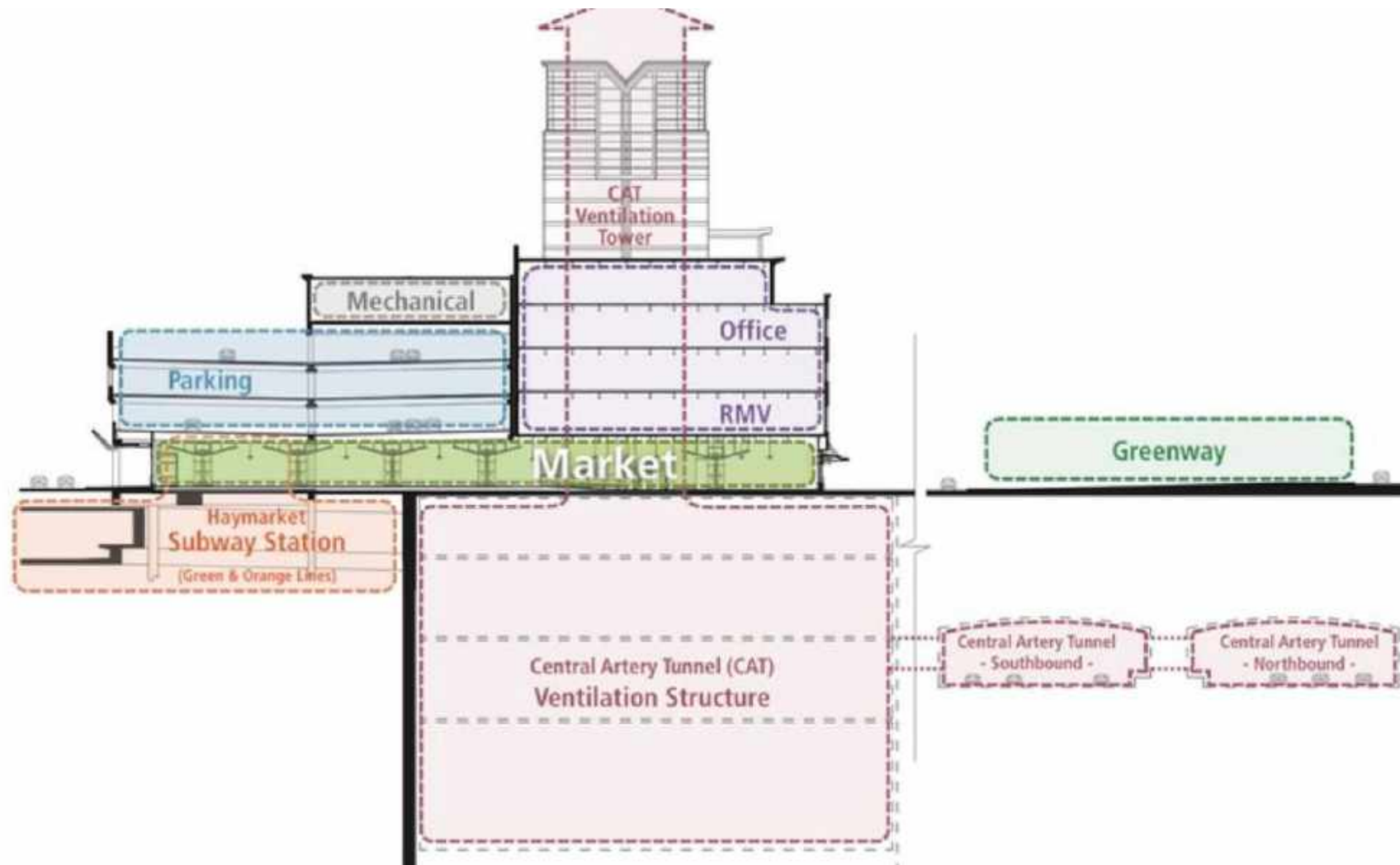


Through displays, signage and active instruction, the entire market is designed as a platform for public education.





Crisply detailed white canopies of corrugated metal are evenly washed with up-lights, creating luminous canted ceilings that vault over 40 distinctive vendor stalls.





Boston Public Market

Overview

LEED Dashboard

Collections (0)

Save This 

ACTIVITY SUMMARY


LEED v4 ID+C Retail Silver certified on 09/28/2017



57
Points awarded

In the top 24% of projects in this rating system version

LEED DASHBOARD

 **Energy and Atmosphere**

18/

Possible Points



 **Materials and Resources**

4/

Possible Points



 **Indoor Environmental Quality**

8/

Possible Points



LOCATION



This project is located at:

Haymarket, 100 Hanover Street, Boston, MA, USA

ACTIVITY DETAILS

Activity Type	LEED
Space Type	Retail
Project Size	28,374 sq ft
Certification date	September 28 2017
CBSA	Boston-Cambridge-Quincy, MA-NH Metropolitan Statistical Area



CINDE is a private, non-profit, and non-political organization, expert in Foreign Direct Investment attraction, retention, and expansion, they promote sustainable productivity and drive investment with a purpose.



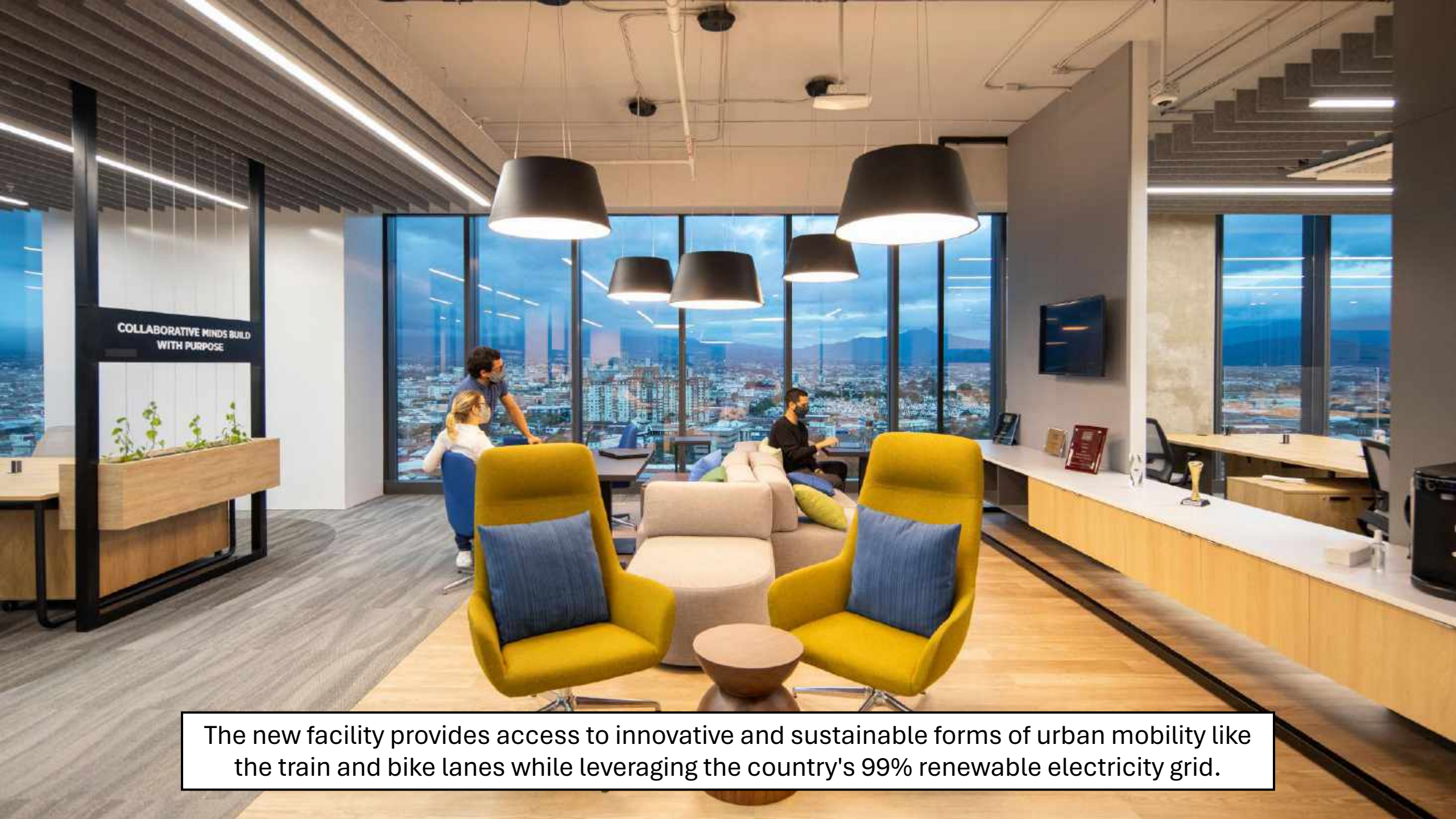
Since 2015, Costa Rica has been working toward an ambitious goal of becoming a carbon-neutral nation.



At both public and private levels, the banking sector in Costa Rica has used LEED as a way of marking their progress toward their green goals.



Costa Rica is a well-known destination for ecotourism, with LEED certified infrastructure for both tourism and business travel.



The new facility provides access to innovative and sustainable forms of urban mobility like the train and bike lanes while leveraging the country's 99% renewable electricity grid.

The image shows a modern office space with large windows overlooking a city. In the foreground, there is a wooden planter box with several small green plants. Behind it, a long wooden desk is visible with three people working on laptops. The office has a clean, minimalist design with wooden accents and large windows.

COSTA RICA: YOUR PATH TO SUSTAINABLE PRODUCTIVITY

CINDE achieved great savings through strategies, three of the main achievements were: savings in indoor water consumption of 52%, a total of 64% of waste during construction, diverted from the sanitary landfill through donations and recycling and through efficient electromechanical systems, savings of 17%. in energy consumption.

**CINDE****LEED ID+C: Commercial Interiors (v4)****GOLD, AWARDED MAR 2021****WATER EFFICIENCY**

AWARDED: 12 / 12

Prereq	Indoor water use reduction	0 / 0
Credit	Indoor water use reduction	12 / 12

**ENERGY & ATMOSPHERE**

AWARDED: 21 / 63

Prereq	Fundamental commissioning and verification	0 / 0
Prereq	Minimum energy performance	0 / 0
Prereq	Fundamental refrigerant Mgmt	0 / 0
Prereq	Minimum Energy Performance (2024 Update)	0 / 0
Credit	Enhanced commissioning	0 / 5
Credit	Advanced energy metering	1 / 2
Credit	Renewable energy production	0 / 3
Credit	Enhanced refrigerant Mgmt	0 / 1
Credit	Green power and carbon offsets	0 / 2
Credit	Optimize Energy Performance (2024 Update)	0 / 25
Credit	Optimize energy performance	20 / 25

**MATERIAL & RESOURCES**

AWARDED: 4 / 13

Prereq	Storage and collection of recyclables	0 / 0
Prereq	Construction and demolition waste Mgmt planning	0 / 0
Credit	Long-term commitment	0 / 1
Credit	Interior life-cycle impact reduction	0 / 4
Credit	Building product disclosure and optimization - environmental product d...	1 / 2
Credit	Building product disclosure and optimization - sourcing of raw materia...	0 / 2
Credit	Building product disclosure and optimization - material ingredients	1 / 2
Credit	Construction and demolition waste Mgmt	2 / 2

**INDOOR ENVIRONMENTAL QUALITY**

AWARDED: 4 / 17

Prereq	Minimum IAQ performance	0 / 0
Prereq	Environmental tobacco smoke control	0 / 0
Credit	Enhanced IAQ strategies	0 / 2
Credit	Low-emitting materials	2 / 3
Credit	Construction IAQ Mgmt plan	1 / 1
Credit	IAQ assessment	0 / 2
Credit	Thermal comfort	0 / 1
Credit	Interior lighting	0 / 2
Credit	Daylight	0 / 3
Credit	Quality views	1 / 1
Credit	Acoustic performance	0 / 2

**INNOVATION**

AWARDED: 6 / 6

Credit	Innovation	5 / 5
Credit	LEED Accredited Professional	1 / 1

**REGIONAL PRIORITY CREDITS**

AWARDED: 2 / 4

Credit	Enhanced commissioning	0 / 1
Credit	Renewable energy production	0 / 1
Credit	Optimize energy performance	1 / 1
Credit	Daylight	0 / 1
Credit	Indoor water use reduction	1 / 1

**LOCATION & TRANSPORTATION**

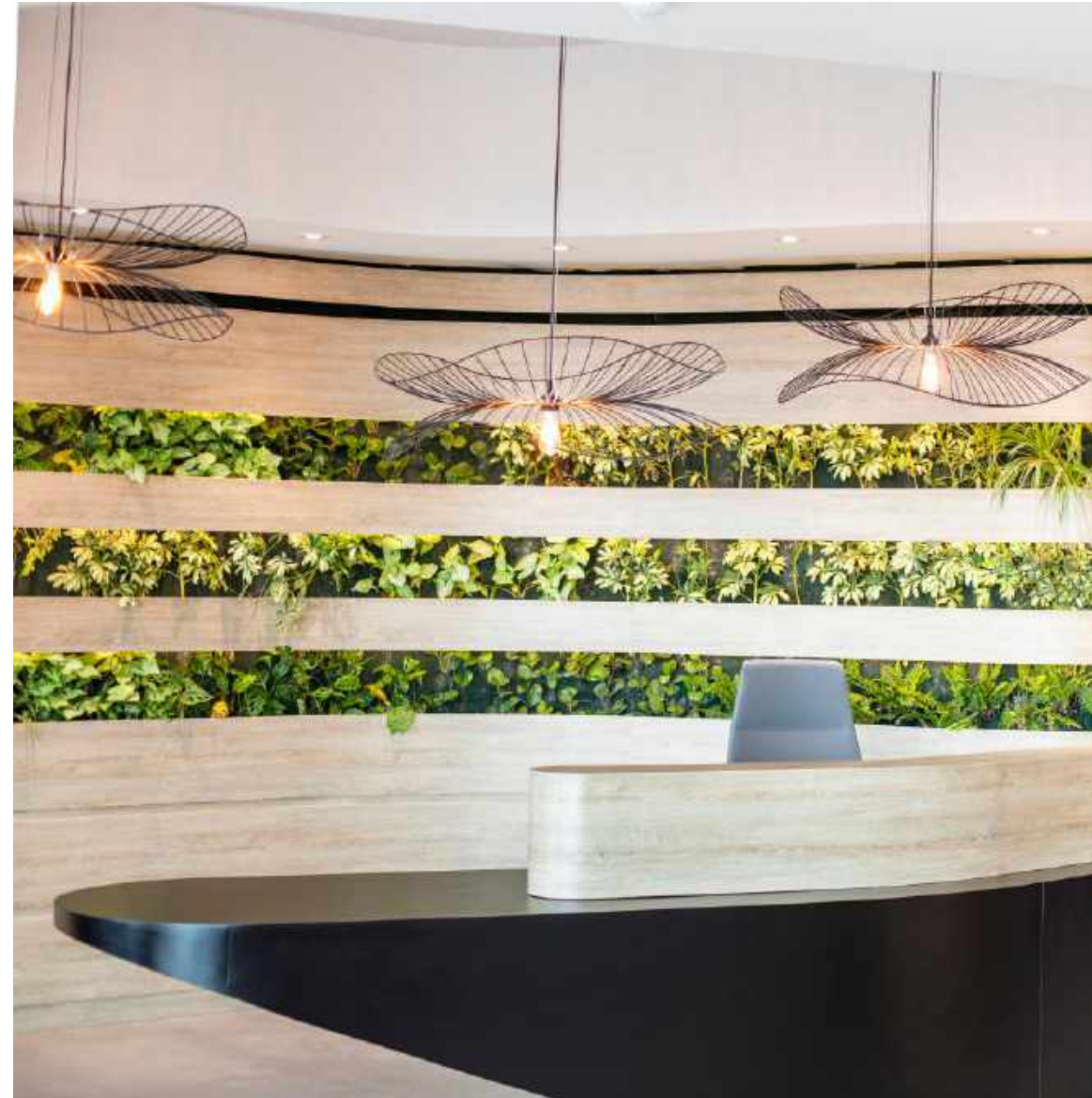
AWARDED: 16 / 20

Credit	LEED for neighborhood development location	0 / 10
Credit	Surrounding density and diverse uses	8 / 8
Credit	Access to quality transit	7 / 7
Credit	Bicycle facilities	1 / 1
Credit	Reduced parking footprint	0 / 2

**INTEGRATIVE PROCESS CREDITS**

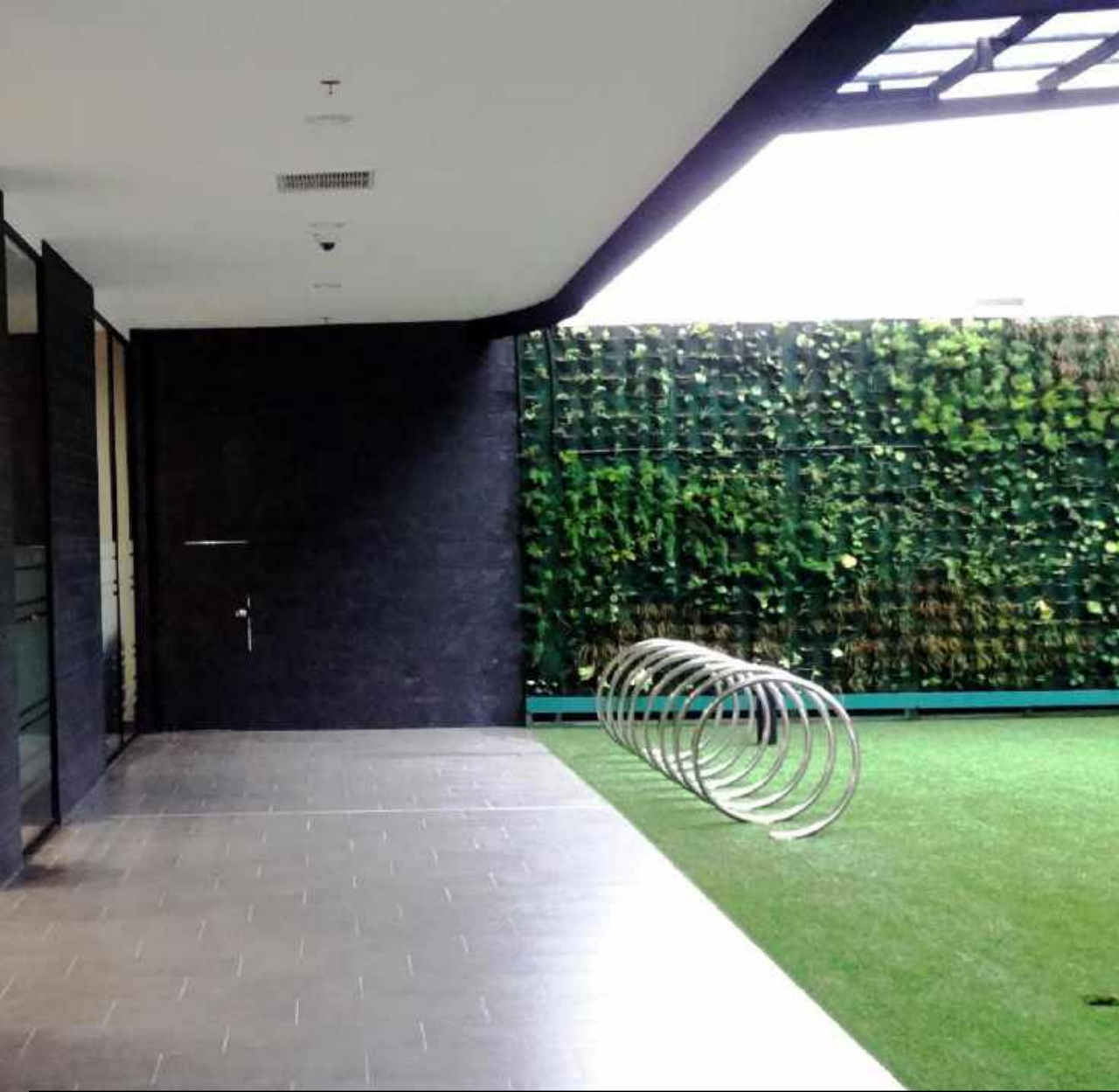
AWARDED: 2 / 2

Credit	Integrative process	2 / 2
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TOTAL**67 / 110**40-49 Points
CERTIFIED50-59 Points
SILVER60-70 Points
GOLD80+ Points
PLATINUM



This office was the first LEED Gold v4 project in Costa Rica. The location of this headquarters contributes to the decrease in the use of the car, since it has multiple public transport routes to facilitate the mobility of employees and customers.



During the construction process, good practices were implemented, from which 51% of all the waste generated was rescued, as well as having a reduction in the amount of waste generated per square foot, giving 0.87lb per square foot.

1000100133, Escazu



Sede INS-Escazu

LEED ID+C: Commercial Interiors (v4)

GOLD, AWARDED MAY 2018



WATER EFFICIENCY

AWARDED: 10 / 12

Prereq	Indoor water use reduction	0 / 0
Credit	Indoor water use reduction	10 / 12



ENERGY & ATMOSPHERE

AWARDED: 16 / 53

Prereq	Fundamental commissioning and ventilation	0 / 0
Prereq	Minimum energy performance	0 / 0
Prereq	Fundamental refrigerant Mgmt	0 / 0
Prereq	Minimum Energy Performance (2024 Update)	0 / 0
Credit	Enhanced commissioning	4 / 5
Credit	Advanced energy metering	1 / 2
Credit	Renewable energy production	0 / 3
Credit	Enhanced refrigerant Mgmt	0 / 1
Credit	Green power and carbon offsets	0 / 2
Credit	Optimize Energy Performance (2024 Update)	0 / 25
Credit	Optimize energy performance	11 / 25



MATERIAL & RESOURCES

AWARDED: 5 / 13

Prereq	Storage and collection of recyclables	0 / 0
Prereq	Construction and demolition waste Mgmt planning	0 / 0
Credit	Long-term commitment	1 / 1
Credit	Interiors lifecycle impact reduction	0 / 4
Credit	Building product disclosure and optimization - environmental product d...	1 / 2
Credit	Building product disclosure and optimization - sourcing of raw materials	1 / 2
Credit	Building product disclosure and optimization - material ingredients	0 / 2
Credit	Construction and demolition waste Mgmt	2 / 2



INDOOR ENVIRONMENTAL QUALITY

AWARDED: 2 / 17

Prereq	Minimum IAQ performance	0 / 0
Prereq	Environmental tobacco smoke control	0 / 0
Credit	Enhanced IAQ strategies	0 / 2
Credit	Low-emitting materials	0 / 3
Credit	Construction IAQ Mgmt plan	1 / 1
Credit	IAQ assessment	0 / 2
Credit	Thermal comfort	0 / 1
Credit	Interior lighting	0 / 2
Credit	Daylight	0 / 3
Credit	Quality views	1 / 1
Credit	Acoustic performance	0 / 2



INNOVATION

AWARDED: 6 / 6

Credit	Innovation	5 / 5
Credit	LEED Accredited Professional	1 / 1



REGIONAL PRIORITY CREDITS

AWARDED: 3 / 4

Credit	Enhanced commissioning	1 / 1
Credit	Optimize energy performance	1 / 1
Credit	Thermal comfort	0 / 1
Credit	Daylight	0 / 1
Credit	Indoor water use reduction	1 / 1



LOCATION & TRANSPORTATION

AWARDED: 18 / 20

Credit	LEED for neighborhood development location	0 / 18
Credit	Surrounding density and diverse uses	3 / 8
Credit	Access to quality transit	7 / 7
Credit	Bicycle facilities	1 / 1
Credit	Reduced parking footprint	2 / 2



INTEGRATIVE PROCESS CREDITS

AWARDED: 0 / 2

Credit	Integrative process	0 / 2
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TOTAL

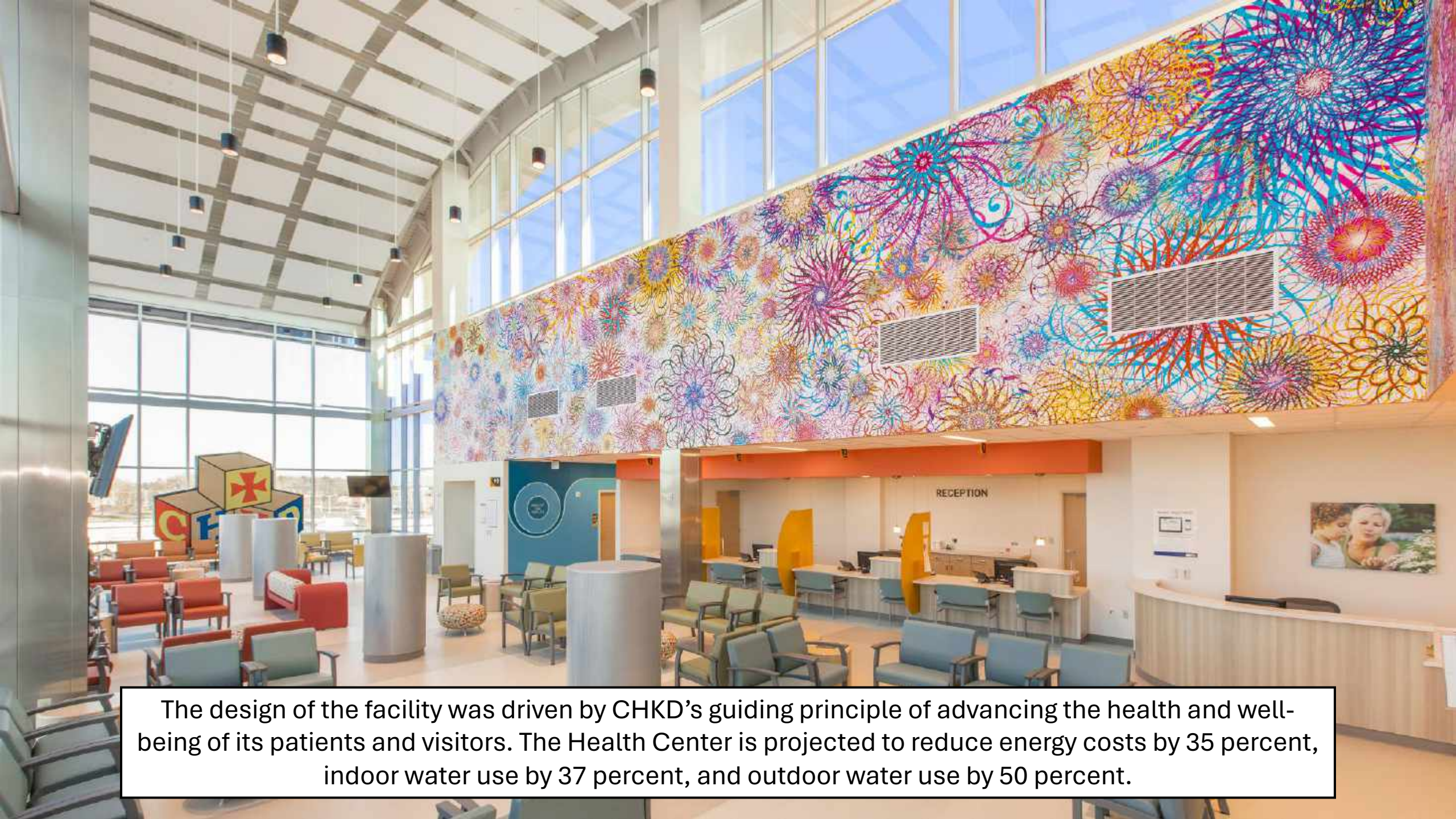
60 / 110

40-49 POINTS CERTIFIED	50-59 POINTS SILVER	60-79 POINTS GOLD	80+ POINTS PLATINUM
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CHKD Health Center & Urgent Care



The design of the facility was driven by CHKD's guiding principle of advancing the health and well-being of its patients and visitors. The Health Center is projected to reduce energy costs by 35 percent, indoor water use by 37 percent, and outdoor water use by 50 percent.

Product Name:
by Product Manufacturer
HPD UNIQUE IDENTIFIER:
CLASSIFICATION:
PRODUCT TYPE:
PRODUCT DESCRIPTION:


Health Product
Declaration® v2.3
created via:


Section 1: Summary
Basic Method/Product Threshold

CONTENT INVENTORY

Inventory Reporting Format	Threshold Level	Residuals/Impurities	For all contents above the threshold, the manufacturer has:
<input type="radio"/> Nested Materials Method <input checked="" type="radio"/> Basic Method	<input type="radio"/> 100 ppm <input type="radio"/> 1,000 ppm <input type="radio"/> Per GHS SDS <input type="radio"/> Other	<input type="radio"/> Completed <input type="radio"/> Partially Completed <input type="radio"/> Not Completed Explanation(s) provided: <input type="radio"/> Yes <input type="radio"/> No	Characterized: <i>Provided weight and rule</i> <input type="radio"/> Yes <input type="radio"/> No Screened: <i>Provided screening results using HPDC-approved methods.</i> <input type="radio"/> Yes <input type="radio"/> No Identified: <i>Provided name and CAS RN or other identifier</i> <input type="radio"/> Yes <input type="radio"/> No

CONTENT IN DESCENDING ORDER OF QUANTITY

Summary of product contents and results from screening individual chemical substances against HPD Priority Hazard Lists and the GreenScreen for Safer Chemicals. The HPD does not assess whether using or handling this product will expose individuals to its chemical substances or any health risk. Refer to Section 2 for further details.

[PRODUCT](#) | [MATERIAL OR SUBSTANCE](#) | [RESIDUAL OR IMPURITY](#)
[GREENSCREEN SCORE](#) | [HAZARD TYPE](#)

Number of GreenScreen BM-4/BM-3 contents:

Contents highest concern GreenScreen Benchmark or List transferor Score:

Nanomaterial:

INVENTORY AND SCREENING NOTES:

VOLATILE ORGANIC COMPOUND (VOC) CONTENT

Material (g/l): Regulatory (g/l):

Does the product contain exempt VOCs?

Are colorants available that do not increase the VOC content of the base paint when tinted?

Third Party Verified?

☐ Yes

☐ No

PREPARED:

VERIFIED:

VERIFICATION #

SCREENING DATE

PUBLISHED DATE

EXPIRY DATE:

CERTIFICATIONS AND COMPLIANCE

VOC Emissions:

CONSISTENCY WITH OTHER PROGRAMS

Material Ingredients Credit

“To encourage the use of products and materials for which life-cycle information is available and that have environmentally, economically, and socially preferable life-cycle impacts. To reward project teams for selecting products for which the chemical ingredients in the product are inventoried using an accepted methodology and for selecting products verified to minimize the use and generation of harmful substances. To reward raw material manufacturers who produce products verified to have improved life-cycle impacts.”



Health Product Declaration Open Standard

Version 2.3

July 20, 2023

Health Product Declaration Collaborative
401 Edgewater Place, Suite 600
Wakefield, MA 01880
+1.480.612.6339
Toll-free: 877.394.3408
www.hpd-collaborative.org
Health Product Declaration 2.3 Open Standard

<http://hpd-collaborative.org>

Differences between EPDs and HPDs:

- EPDs focus on a product's life cycle and environmental impacts
- HPDs focus on human health and potential hazards of a product's ingredients
- EPDs are maintained by multiple global organizations
- HPDs are maintained by the HPDC
- EPD development requires an often long, complex, multi-step process
- HPD development is typically quicker and easier than EPDs
- EPDs require a program operator
- HPDs can be self-published
- EPDs don't contribute to WELL certification
- HPDs can contribute to WELL certification



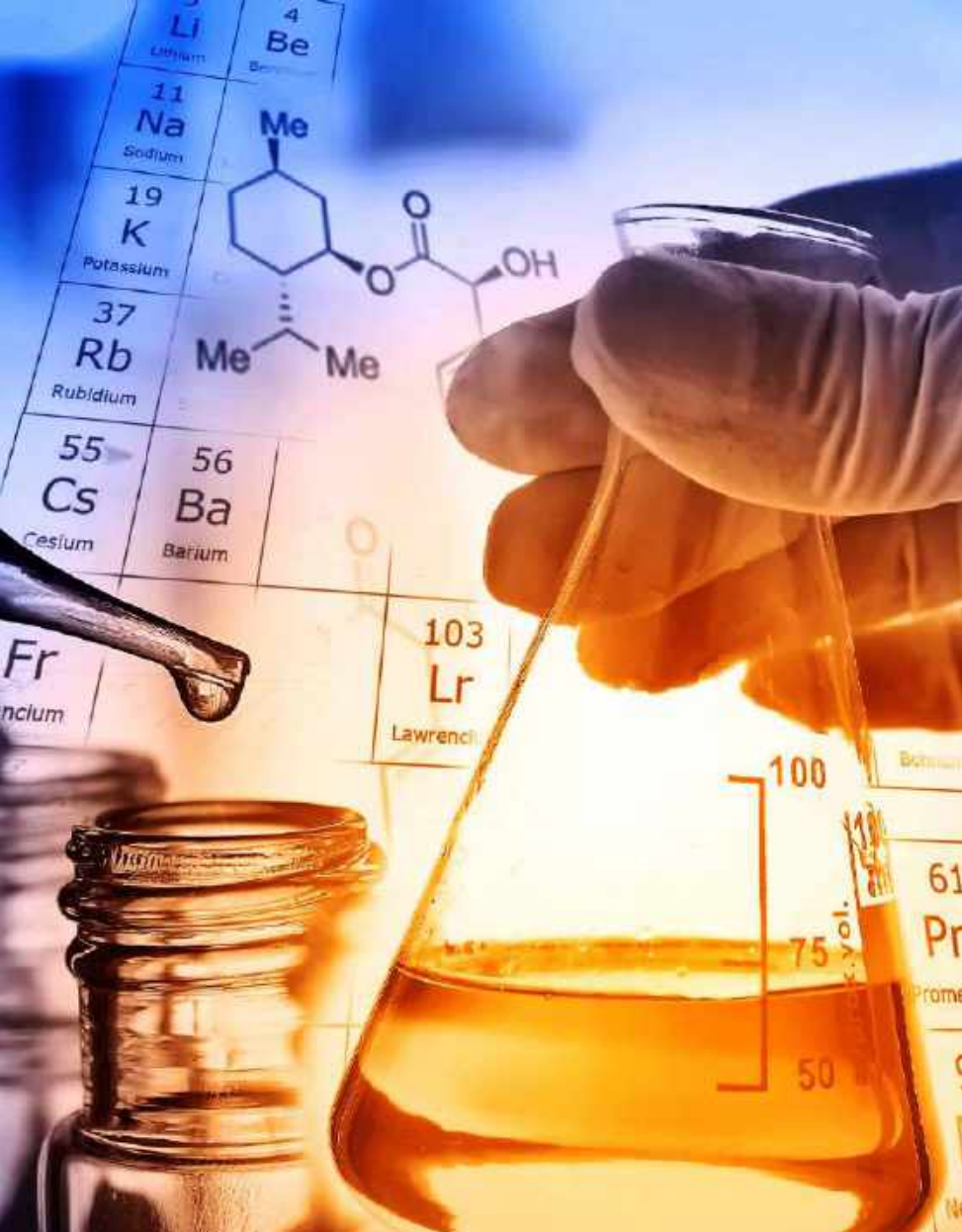
Similarities between EPDs and HPDs

- EPDs and HPDs are transparency documents used by specifiers
- EPDs and HPDs can contribute to earning points in LEED
- EPDs and HPDs promote product optimization in LEED
- EPDs and HPDs can be third party verified
- EPDs and HPDs drive demand for sustainable products





The occupants of an average office building, school, or warehouse have little knowledge of the components of the building that surrounds them every day.



Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.



Waste diversion was a major goal of the medical facility. To make up for the lack of drywall recycling facilities in the Hampton Roads region and to maximize construction waste recycling, the construction team eliminated unnecessary packaging prior to arriving on site.



The main lobby and third floor waiting area both receive abundant daylight and provide views to nature; however, they are both two-story spaces that have a large amount of glass.



CHKD emphasized the importance of physical activity, waste reduction, healthy materials, daylight access and more.

- Innovative HVAC displacement ventilation system in main lobby and third floor waiting area to efficiently condition the open space
- Green cleaning practices promote a healthy environment for building occupants and housekeeping staff
- Community connectivity—the building is located within walking distance to over 10 services and just steps away from a bicycle trail network
- LED lighting





- Hot water reheat system for the terminal units and radiation devices
- High-performance glazing
- Enhanced commissioning of HVAC, plumbing, lighting systems and building envelope
- CO2 monitoring system
- Full cut-off exterior light fixtures to reduce light pollution

LEED Scorecard

Silver 50/110

▼ INTEGRATIVE PROCESS CREDITS

1 / 1



▼ LOCATION & TRANSPORTATION

3 / 20



▼ SUSTAINABLE SITES

2 / 10



▼ WATER EFFICIENCY

5 / 11



▼ ENERGY & ATMOSPHERE

21 / 53



▼ MATERIAL & RESOURCES

4 / 13



▼ INDOOR ENVIRONMENTAL QUALITY

7 / 16



▼ REGIONAL PRIORITY CREDITS

2 / 4



▼ INNOVATION

5 / 6





The USGBC Headquarters was certified under the LEED v4.1 ID+C ratings system. The project was awarded earned triple Platinum certification from the GBCI. The certifications include LEED ID+C, WELL, and TRUE, marking the first time a project has achieved this feat.

Materials Reuse and Circularity

- 95% of the original construction materials were reused or diverted from landfills, including ceiling tiles, ceiling grid, drywall, glass panels, hardware, millwork, and terrazzo flooring.
- 60% of furniture and supplies were reused. To further avoid landfill, the USGBC offered furniture to staff, donated items, and sold items at auction.
- Multiple offices were kept in place and intact, reducing demolition waste.





Sustainable and Efficient Operations

- Measuring and monitoring operational data was a primary goal for the USGBC
- Water meters monitor water consumption and incentivize ways to improve conservation
- Specialized monitors collect indoor air quality data

Carbon Reduction Strategies




- The Building Transparency Embodied Carbon in Construction Calculator (EC3) Tool allowed the firm to research and specify materials with a low embodied carbon impact.
- Completion of a Life Cycle Assessment (LCA) to provide further insights into opportunities to reduce emissions in embodied, operational, and end-of-use scenarios.
- The space achieved 80% reused and repurposed materials, resulting in an outstanding 44% reduction in carbon emissions below the Carbon Leadership Forum baseline for an interior buildout.





LEED Scorecard

Platinum 87/110

✓ INTEGRATIVE PROCESS CREDITS	2 / 2	
✓ LOCATION & TRANSPORTATION	17 / 20	
✓ WATER EFFICIENCY	8 / 12	
✓ ENERGY & ATMOSPHERE	31 / 38	
✓ MATERIAL & RESOURCES	9 / 13	
✓ INDOOR ENVIRONMENTAL QUALITY	10 / 18	
✓ REGIONAL PRIORITY CREDITS	4 / 4	
✓ INNOVATION	6 / 6	



Cummins Beijing New Office



The project benefits from a convenient public transportation network for employees and visitors, mature neighborhood community facilities, good base building systems to support energy saving and indoor environmental improvement measures.



From a design perspective, energy efficient HVAC zoning and controls, lighting control with daylight/occupancy sensors, ENERGY STAR equipment and appliances and other energy saving features are incorporated into the project.



CO2 levels in the office are monitored in each occupied zones and the feedback are used to control the outdoor air volume. Paints, adhesives, furniture and other related materials used in the renovation work are with zero or low VOC emissions.



The design concept for the workplace is inspired by Cummins' slogan, "Power the world," and walking through the hub area is akin to a motor that gathers employees to generate energy.

LEED Scorecard

Gold 65/110

✓ INTEGRATIVE PROCESS CREDITS

2 / 2



✓ LOCATION & TRANSPORTATION

17 / 20



✓ WATER EFFICIENCY

12 / 12



✓ ENERGY & ATMOSPHERE

17 / 63



✓ MATERIAL & RESOURCES

2 / 13



✓ INDOOR ENVIRONMENTAL QUALITY

6 / 17



✓ REGIONAL PRIORITY CREDITS

4 / 4



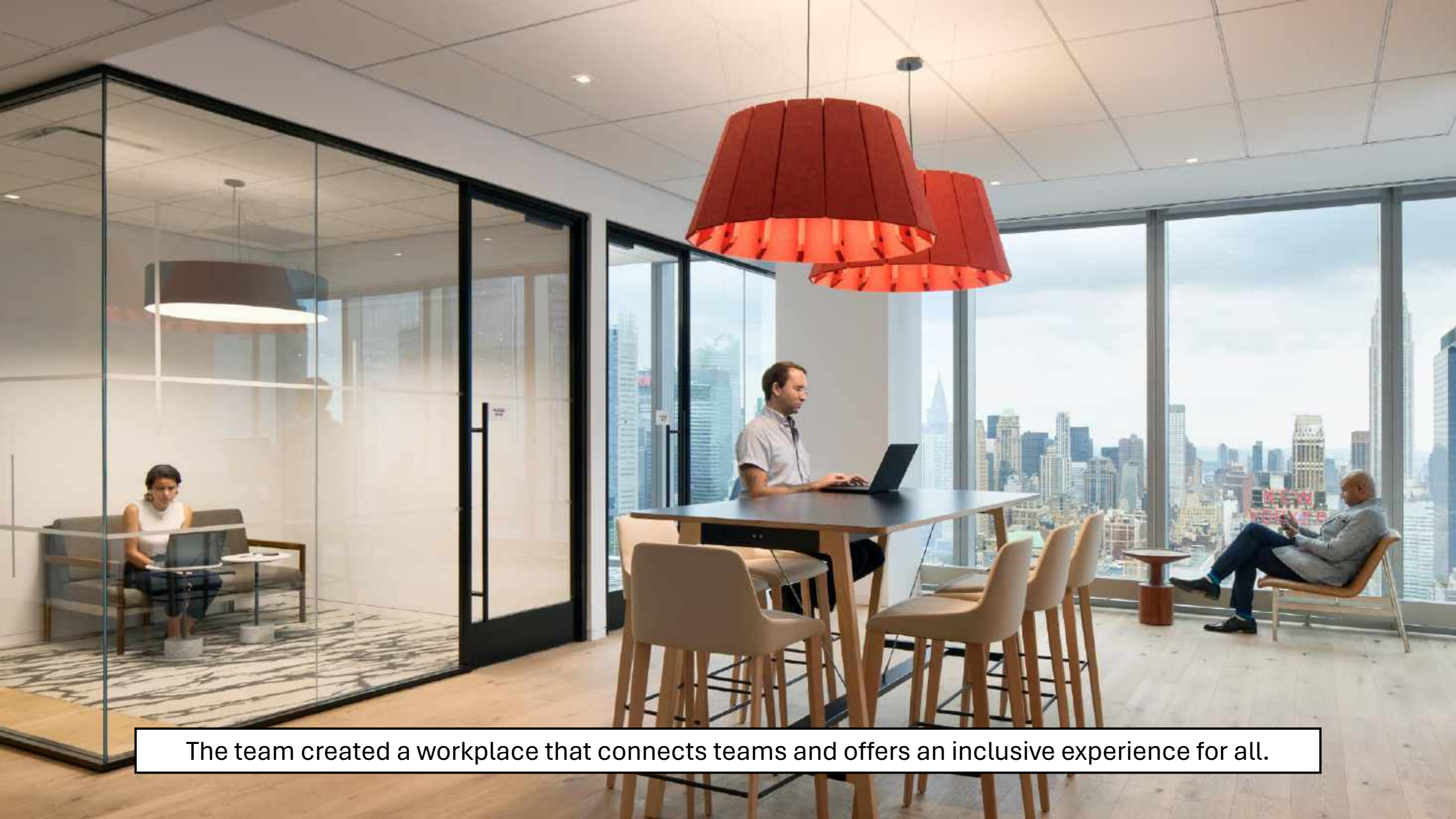
✓ INNOVATION

5 / 6





Turner Construction Headquarters



The team created a workplace that connects teams and offers an inclusive experience for all.



1000151271, New York, New York



Turner Construction HQ and NY Office

LEED ID+C: Commercial Interiors (v4)

PLATINUM, AWARDED JUN 2023



WATER EFFICIENCY

AWARDED: 4 / 12

Prereq	Indoor water use reduction	0 / 0
Credit	Indoor water use reduction	4 / 12



ENERGY & ATMOSPHERE

AWARDED: 28 / 63

Prereq	Fundamental commissioning and verification	0 / 0
Prereq	Minimum energy performance	0 / 0
Prereq	Fundamental refrigerant Mgmt	0 / 0
Prereq	Minimum energy performance (2014 update)	0 / 0
Credit	Enhanced commissioning	5 / 5
Credit	Advanced energy metering	2 / 2
Credit	Renewable energy production	0 / 3
Credit	Enhanced refrigerant Mgmt	0 / 1
Credit	Green power and carbon offset	0 / 2
Credit	Optimize Energy Performance (2024 Update)	6 / 25
Credit	Optimize energy performance	21 / 25



MATERIAL & RESOURCES

AWARDED: 10 / 13

Prereq	Storage and collection of recyclables	0 / 0
Prereq	Construction and demolition waste Mgmt planning	0 / 0
Credit	Long-term commitment	1 / 1
Credit	Interior life-cycle impact reduction	2 / 4
Credit	Building product disclosure and optimization - environmental product d...	1 / 2
Credit	Building product disclosure and optimization - sourcing of raw materia...	2 / 2
Credit	Building product disclosure and optimization - material ingredients	2 / 2
Credit	Construction and demolition waste Mgmt	2 / 2



INDOOR ENVIRONMENTAL QUALITY

AWARDED: 11 / 17

Prereq	Minimum IAQ performance	0 / 0
Prereq	Environmental tobacco smoke control	0 / 0
Credit	Enhanced IAQ strategies	2 / 2
Credit	Low-emitting materials	3 / 3
Credit	Construction IAQ Mgmt plan	1 / 1
Credit	IAQ assessment	2 / 2
Credit	Thermal comfort	0 / 3
Credit	Interior lighting	1 / 2
Credit	Daylight	1 / 3
Credit	Quality views	0 / 1
Credit	Acoustic performance	2 / 2



INNOVATION

AWARDED: 6 / 6

Credit	Innovation	3 / 3
Credit	LEED Accredited Professional	3 / 3



REGIONAL PRIORITY CREDITS

AWARDED: 4 / 4

Credit	Enhanced commissioning	1 / 1
Credit	Optimize energy performance	3 / 3
Credit	Enhanced IAQ strategies	0 / 1
Credit	Interior life-cycle impact reduction	1 / 3
Credit	Building product disclosure and optimization - environmental product d...	1 / 1
Credit	Indoor water use reduction	0 / 1



LOCATION & TRANSPORTATION

AWARDED: 17 / 20

Credit	LEED for neighborhood development location	0 / 10
Credit	Surrounding density and diverse uses	5 / 6
Credit	Access to quality transit	1 / 7
Credit	Bicycle facilities	0 / 1
Credit	Reduced parking footprint	2 / 2



INTEGRATIVE PROCESS CREDITS

AWARDED: 2 / 2

Credit	Integrative process	2 / 2
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TOTAL

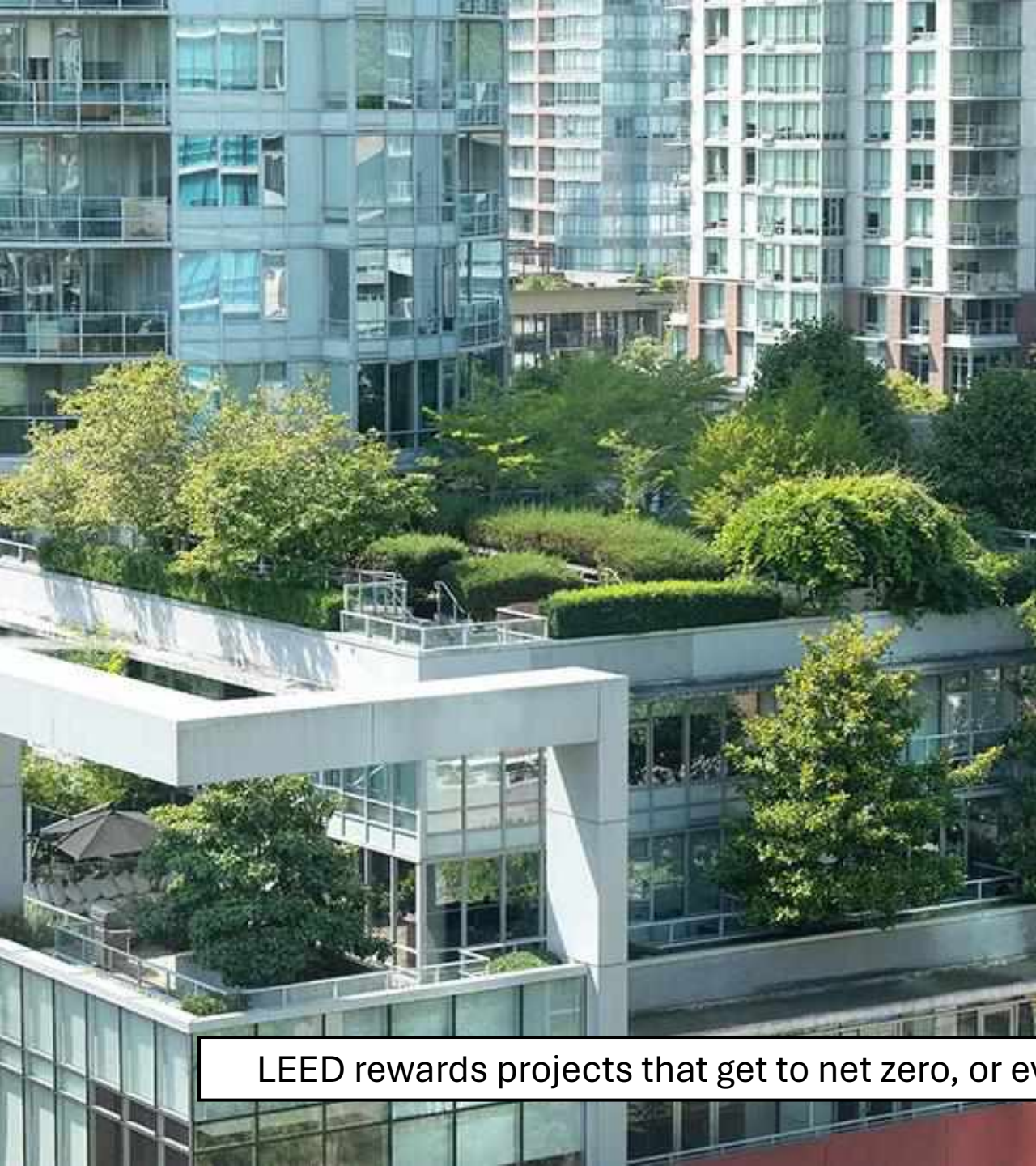
82 / 110

40-49 Points CERTIFIED	50-59 Points SILVER	60-79 Points GOLD	80+ Points PLATINUM
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Climate change is among the biggest challenges of our time. The warming planet will affect virtually every aspect of life as we know it, often falling disproportionately on our most vulnerable and least resilient communities.



LEED rewards projects that get to net zero, or even generate positive energy returns to the grid.



LEED rewards reductions in water use and the “embodied carbon” used to produce, move and treat that water.



LEED encourages life cycle assessment (LCA) of building materials and products, and, in turn, whole buildings.



Buildings can create opportunities for more composting and reduced landfill waste and for alternative transportation.



LEED rewards thoughtful decisions about building location with credits that encourage connection with transit and amenities, as well as retention and creation of natural vegetated land areas and roofs.



High-performing LEED certified buildings can help reduce water, waste, and carbon emissions.



Credits in the Energy and Atmosphere category not only directly reduce energy use, but they also address systems that rely on carbon-based energy sources and award the use of low-carbon energy sources.



Establishing LEED criteria addressing the age of a renewable energy-generating asset helps to guide project team decision-making and direct investments toward increasing the supply of renewable energy on the grid, versus using existing renewable energy capacity where possible.

Credits in the Location and Transportation category enable new buildings to improve land use patterns and position occupants to take advantage of public transportation.





Materials and Resources credits address a building's embodied carbon by targeting the energy use and processes required in the extraction, production, transportation, manufacturing, distribution and disposal of materials and products used throughout the entire life cycle of a building.



Water Efficiency credits address the significant use of energy related to the treatment, processing and distribution of water by requiring a reduction of water used.



Sustainable Sites credits focus on the non-energy-related drivers of climate change, including land use changes, heat island effect and pollution through solutions such as green infrastructure and purposeful decisions on building location and siting.



LEED Zero

LEED Zero verifies net zero goals.



Petinelli Curitiba | LEED Zero | Photo: © Petinelli

What happens when we take lessening the impact of buildings on the environment to the next level? For more than two decades, LEED has provided a framework for high performance buildings and spaces, and reduced greenhouse gas emissions through strategies impacting land, energy, transportation, water, waste and materials. Building on that work, USGBC has developed LEED Zero, a complement to LEED that verifies the achievement of net zero goals in existing buildings.



LEED Zero Carbon: Hanergy Renewable Energy Center



1000118404, Beijing



Hanergy Renewable Energy Center

LEED O+M: Existing Buildings (v4)

PLATINUM, AWARDED SEP 2019



SUSTAINABLE SITES

AWARDED: 5 / 10

Prereq	Site Mgmt policy	0 / 0
Credit	Site development - protect or restore habitat	2 / 2
Credit	Rainwater Mgmt	0 / 3
Credit	Heat island reduction	1 / 2
Credit	Light pollution reduction	0 / 1
Credit	Site Mgmt	1 / 1
Credit	Site improvement plan	1 / 1



WATER EFFICIENCY

AWARDED: 12 / 12

Prereq	Indoor water use reduction	0 / 0
Prereq	Building-level water metering	0 / 0
Credit	Outdoor water use reduction	2 / 2
Credit	Cooling tower water use	3 / 3
Credit	Water metering	2 / 2
Credit	Indoor water use reduction	5 / 5



ENERGY & ATMOSPHERE

AWARDED: 36 / 38

Prereq	Energy efficiency best Mgmt practices	0 / 0
Prereq	Minimum energy performance	0 / 0
Prereq	Building-level energy metering	0 / 0
Prereq	Fundamental refrigerant Mgmt	0 / 0
Prereq	Energy Jumpstart	REQUIRED
Credit	Existing building commissioning—analysis	2 / 2
Credit	Existing building commissioning—implementation	2 / 2
Credit	Ongoing commissioning	3 / 3
Credit	Advanced energy metering	2 / 2
Credit	Demand response	1 / 3
Credit	Renewable energy and carbon offsets	5 / 5
Credit	Enhanced refrigerant Mgmt	1 / 1
Credit	Optimize energy performance	20 / 20



MATERIAL & RESOURCES

AWARDED: 7 / 8

Prereq	Ongoing purchasing and waste policy	0 / 0
Prereq	Facility maintenance and renovation policy	0 / 0
Credit	Solid waste Mgmt - ongoing	2 / 2
Credit	Solid waste Mgmt - facility maintenance and renovation	2 / 2
Credit	Purchasing - lamps	1 / 1
Credit	Purchasing - ongoing	0 / 1
Credit	Purchasing - facility maintenance and renovation	2 / 2



INDOOR ENVIRONMENTAL QUALITY

AWARDED: 10 / 17

Prereq	Minimum IAQ performance	0 / 0
Prereq	Environmental Tobacco Smoke Control	0 / 0
Prereq	Green cleaning policy	0 / 0
Prereq	IAQ procedure	REQUIRED
Credit	IAQ Mgmt program	2 / 2
Credit	Enhanced IAQ strategies	2 / 2
Credit	Thermal comfort	0 / 1
Credit	Interior lighting	0 / 2
Credit	Daylight and quality views	0 / 4
Credit	Green cleaning - custodial effectiveness assessment	1 / 1
Credit	Green cleaning - products and materials	1 / 1
Credit	Green cleaning - equipment	1 / 1
Credit	Integrated pest Mgmt	2 / 2
Credit	Occupant comfort survey	1 / 1



INNOVATION

AWARDED: 5 / 6

Credit	Innovation	4 / 5
Credit	LEED Accredited Professional	1 / 1



REGIONAL PRIORITY CREDITS

AWARDED: 4 / 4

Credit	Ongoing commissioning	1 / 1
Credit	Optimize energy performance	1 / 1
Credit	IAQ Mgmt program	1 / 1
Credit	Heat island reduction	0 / 1
Credit	Indoor water use reduction	1 / 1



LOCATION & TRANSPORTATION

AWARDED: 15 / 20

Credit	Alternative transportation	15 / 15
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TOTAL

94 / 110

40-49 Points
CERTIFIED

50-59 Points
SILVER

60-79 Points
GOLD

80+ Points
PLATINUM



During the LEED Zero Carbon certification process, Hanergy's Renewable Energy Center was adjudged to uphold the three-level energy efficiency concept of self-sufficiency, surplus storage, and grid independence, while exhibiting green environmental protection design, technological innovation, and sustainable development.



LEED Zero Waste: People Against Dirty Factory




LEED Zero Waste: People Against Dirty Factory



LEED Zero Waste: People Against Dirty Factory




LEED Zero Waste: People Against Dirty Factory



SUSTAINABLE SITES

AWARDED: 25 / 26


SSp1	Construction activity pollution prevention	REQUIRED
SSc1	Site selection	1 / 1
SSc2	Development density and community connectivity	5 / 5
SSc3	Brownfield redevelopment	1 / 1
SSc4.1	Alternative transportation - public transportation access	6 / 6
SSc4.2	Alternative transportation - bicycle storage and changing rooms	1 / 1
SSc4.3	Alternative transportation - low-emitting and fuel-efficient vehicles	3 / 3
SSc4.4	Alternative transportation - parking capacity	2 / 2
SSc5.1	Site development - protect or restore habitat	1 / 1
SSc5.2	Site development - maximize open space	1 / 1
SSc6.1	Stormwater design - quantity control	1 / 1
SSc6.2	Stormwater design - quality control	1 / 1
SSc7.1	Heat island effect - nonroof	1 / 1
SSc7.2	Heat island effect - roof	1 / 1
SSc8	Light pollution reduction	0 / 1



WATER EFFICIENCY

AWARDED: 6 / 10


WEp1	Water use reduction	REQUIRED
WEc1	Water efficient landscaping	4 / 4
WEc2	Innovative wastewater technologies	0 / 2
WEc3	Water use reduction	2 / 4



ENERGY & ATMOSPHERE

AWARDED: 32 / 35


EAp1	Fundamental commissioning of building energy systems	REQUIRED
EAp2	Minimum energy performance	REQUIRED
EAp3	Fundamental refrigerant Mgmt	REQUIRED
EAc1	Optimize energy performance	19 / 19
EAc2	On-site renewable energy	7 / 7
EAc3	Enhanced commissioning	2 / 2
EAc4	Enhanced refrigerant Mgmt	2 / 2
EAc5	Measurement and verification	0 / 3
EAc6	Green power	2 / 2



MATERIAL & RESOURCES

AWARDED: 6 / 14


MRp1	Storage and collection of recyclables	REQUIRED
MRC1.1	Building reuse - maintain existing walls, floors and roof	0 / 3
MRC1.2	Building reuse - maintain interior nonstructural elements	0 / 1
MRC2	Construction waste Mgmt	2 / 2
MRC3	Materials reuse	0 / 2
MRC4	Recycled content	2 / 2



MATERIAL & RESOURCES

CONTINUED


MRC5	Regional materials	2 / 2
MRC6	Rapidly renewable materials	0 / 1
MRC7	Certified wood	0 / 1



INDOOR ENVIRONMENTAL QUALITY

AWARDED: 6 / 15


EQp1	Minimum IAQ performance	REQUIRED
EQp2	Environmental Tobacco Smoke (ETS) control	REQUIRED
EQc1	Outdoor air delivery monitoring	1 / 1
EQc2	Increased ventilation	0 / 1
EQc3.1	Construction IAQ Mgmt plan - during construction	1 / 1
EQc3.2	Construction IAQ Mgmt plan - before occupancy	0 / 1
EQc4.1	Low-emitting materials - adhesives and sealants	1 / 1
EQc4.2	Low-emitting materials - paints and coatings	1 / 1
EQc4.3	Low-emitting materials - flooring systems	1 / 1
EQc4.4	Low-emitting materials - composite wood and agrifiber products	0 / 1
EQc5	Indoor chemical and pollutant source control	1 / 1
EQc6.1	Controllability of systems - lighting	0 / 1
EQc6.2	Controllability of systems - thermal comfort	0 / 1
EQc7.1	Thermal comfort - design	0 / 1
EQc7.2	Thermal comfort - verification	0 / 1
EQc8.1	Daylight and views - daylight	0 / 1
EQc8.2	Daylight and views - views	0 / 1



INNOVATION

AWARDED: 6 / 6

IDc1	Innovation in design	0 / 1
IDc2	LEED Accredited Professional	0 / 1



REGIONAL PRIORITY CREDITS

AWARDED: 4 / 4

SSc2	Development density and community connectivity	1 / 1
SSc4.1	Alternative transportation - public transportation access	1 / 1
SSc4.3	Alternative transportation - low-emitting and fuel-efficient vehicles	1 / 1
SSc4.4	Alternative transportation - parking capacity	0 / 1
SSc6.1	Stormwater design - quantity control	0 / 1
SSc6.2	Stormwater design - quality control	1 / 1

TOTAL

85 / 110

40-49 Points
CERTIFIED

50-59 Points
SILVER

60-79 Points
GOLD

80+ Points
PLATINUM



Driving Action on Embodied Carbon in Buildings

Answers to current questions about embodied carbon and key actions
to accelerate the decarbonization of building construction



Critical Questions For Design Professionals

- How big an opportunity is embodied carbon?
- Which should we prioritize: operational or embodied emissions?
- What should we prioritize to reduce embodied carbon today?
- Do low-embodied-carbon materials cost more?
- What should I measure and how?
- Is the data good enough?

Driving Action on Embodied Carbon in Buildings

Answers to current questions about embodied carbon and key actions
to accelerate the decarbonization of building construction



Critical Questions For Design Professionals








- Is there enough data on interiors and furnishings?
- What is the future of concrete and steel?
- Can wood products benefit the climate?
- Is carbon storage in buildings really possible?
- What does the policy landscape look like for embodied carbon?



EPD Transparency Brief

COMPANY NAME	InterfaceFLOR
PRODUCT TYPE	Modular Carpet Tile
PRODUCT NAME	Modular Carpet on GlasBac® Nylon 6 Styles
PRODUCT DEFINITION	Modular carpet with recycled solution dyed Nylon 6 yarn face cloth combined with GlasBac® backing. The products are manufactured by InterfaceFLOR in LaGrange, Georgia USA.
PRODUCT CATEGORY RULE (PCR)	PCR-Floorcoverings Harmonised Rules for Textile, Laminate and Resilient Floor Coverings
CERTIFICATION PERIOD	September 19, 2011 - September 19, 2016
DECLARATION NUMBER	110919.11CA29311.101.1



LIFECYCLE IMPACT CATEGORIES		
The environmental impacts listed below were assessed throughout the product's lifecycle – including raw material extraction, transportation, manufacturing, packaging, use, and disposal at end of life.		
ATMOSPHERE	WATER	EARTH
 Global Warming Potential refers to long-term changes in global weather patterns—including temperature and precipitation—	 Acidification Potential is the result of human-made emissions and refers to the decrease in pH and increase in acidity of oceans, lakes, rivers, and streams—a	 Depletion of Abiotic Resources (Elements) refers to the reduction of available non-renewable resources, such as metals and gases, that are found
 Ozone Depletion Potential is the destruction of the stratospheric ozone layer, which shields the earth from ultraviolet radiation that's	 Eutrophication Potential occurs when excessive nutrients cause increased algae growth in lakes, blocking the underwater	 Depletion of Abiotic Resources (Fossil Fuels) refers to the decreasing availability of non-renewable carbon-based compounds, such as oil and coal, due to human activity.
 Photochemical Ozone Creation Potential happens when sunlight reacts with hydrocarbons, nitrogen oxides, and volatile organic compounds,		

Successful decarbonization requires collective industry action from multiple players. We must expand industry knowledge of current best practices for low-embodied carbon buildings through programs, initiatives, and certifications.

One square meter of carpet, medium face weight (712 grams/square meter, 21 ounces/square yard). The use stage is for one year of carpet life. The reference flow is one square meter of modular carpet.

LEED v4.1 BD+C Credits

- Building Product Disclosure and Optimization – Environmental Product Declarations
- Construction and Demolition Waste Management
- Building Life-Cycle Impact Reduction
- Sourcing of Raw Materials



LEED v4.1 ID+C Credits

- Interiors Life-Cycle Impact Reduction
- Building Product Disclosure and Optimization – Environmental Product Declarations
- Long-Term Commitment
- Sourcing of Raw Materials
- Construction and Demolition Waste Management







By prioritizing eco-conscious principles, fostering collaboration, and leveraging their creative expertise, design professionals can not only mitigate environmental impacts but also inspire a more harmonious relationship between humanity and the planet. Together, let us embrace the power of design to forge a sustainable and resilient future for generations to come.

Learning Objectives

- Discuss LEED v4 BD+C and ID+C sustainable design strategies by reviewing building case studies that promote environmental and human health
- Describe LEED v4 BD+C and ID+C credits that elevate sustainable design projects and help reduce global warming potential and toxic materials for buildings
- Examine LEED v4 BD+C and ID+C strategies that reduce construction waste, promote renewable energy, and support local communities
- Review how LEED can address significant environmental challenges within the construction industry and beyond





Elixir
Environmental

Thank You!