

AREA PRODUTTIVA ECO-LOGISTICA DUGARA

Comuni di Brescello e Paviglio

FASE PRELIMINARE AL PAUR di VIA (art.26-bis)

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ELABORATO

ELABORATI GENERALI

RELAZIONE DI APPLICABILITA' DEL PROTOCOLLO LEED

Cartella	File name
1	010_RELAZIONE_DI_APPLICABILITA' DEL PROTOCOLLO LEED

Prot.
5207

Scala

X

Formato
A4

Relazione LEED

Nuovo Warehouse e Distribution Center - Brescello

REV.	00	DATA	30/10/2023
REDATTO	PA	APPROVATO	CC
Relazione LEED			

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1 PREMESSA

Questo documento riporta l'analisi preliminare circa la fattibilità ed il posizionamento del progetto del **Nuovo Warehouse e Distribution Center - Brescello** in rapporto alla certificazione LEED indicando le strategie di sostenibilità che potranno essere implementate nel progetto.

I protocolli di riferimento sono il **LEED BD+C V4 New Construction - Warehouse** e, per alcuni crediti specifici, il **LEED BD+C V4.1 New Construction**.

Vengono qui descritti i requisiti generali e particolari, a supporto della Committenza e del Team di progettazione, che definiscono le procedure da mettere in atto al fine di realizzare un edificio sostenibile in accordo con le prescrizioni della certificazione LEED (Leadership in Energy and Environmental Design).

2 OBIETTIVI DELLA COMMITTENZA

Il presente progetto attualmente nella fase di progetto definitivo prevede di perseguire le certificazioni LEED. I livelli di certificazione richiesti dalla Committenza prevedono di raggiungere come minimo il livello **PLATINUM** per la certificazione LEED mediante il protocollo **LEED BD+C v.4 New Construction**.

3 SISTEMA DI CERTIFICAZIONE LEED: INTRODUZIONE E METODO DI VALUTAZIONE

LEED -Leadership in Energy and Environmental Design- è un sistema di certificazione degli edifici che nasce su base volontaria in America ad opera di U.S.Green Building Council (USGBC), associazione no profit fondata nel 1993 che conta ad oggi più di 20.000 membri.

LEED è lo standard volontario più diffuso al mondo, utilizzato in più di 140 paesi che ha come scopo primario la promozione e lo sviluppo di un approccio globale alla sostenibilità attraverso la certificazione delle prestazioni e della qualità degli edifici con l'attribuzione di un punteggio in ambiti chiave per la salute umana e per la salvaguardia dell'ambiente.

Il protocollo LEED definisce edifici a basso impatto ambientale ed alta qualità costruttiva attraverso il coinvolgimento di tutta la filiera dell'edilizia, dai progettisti ai costruttori, dall'industria dei materiali al mercato immobiliare.

LEED un sistema flessibile e articolato che, mantenendo una impostazione di fondo coerente tra i vari ambiti, prevede formulazioni differenziate per le nuove costruzioni (Building Design & Construction; Healthcare; Core & Shell, School, etc), edifici esistenti (OM - Operation & Maintenance), piccole abitazioni (GBC Italia Home) e per aree urbane (ND - Neighborhood).

Gli standard LEED, elaborati da USGBC offrono dettagliate linee guida per costruire edifici sostenibili sotto ogni punto di vista, da quello relativo al contenimento dei consumi energetici e dei costi di manutenzione, al comfort e la salute degli utenti, a quello del consumo di risorse primarie coinvolte nel processo di realizzazione.

La certificazione costituisce una verifica di parte terza indipendente, delle performance di un intero edificio e/o di aree urbane affermando così che l'edificio è rispettoso dell'ambiente e che costituisce un luogo salubre in cui vivere e lavorare.

Il sistema di certificazione LEED è caratterizzato da un'elevata adattabilità e si sviluppa in sezioni tematiche, ciascuna organizzata in *Prerequisiti e Crediti*. I Prerequisiti hanno carattere di obbligatorietà e devono essere soddisfatti affinché l'edificio possa essere

certificato; i Crediti, suddivisi in crediti afferenti la fase di progettazione (Design) e afferenti la fase di costruzione (Construction), possono essere scelti in funzione delle caratteristiche intrinseche del fabbricato e dell'ambiente in cui esso si colloca.

La somma dei punteggi ottenuti in ciascuna area tematica determina il livello di certificazione raggiunto nell'edificio, in accordo alla classificazione di seguito specificata:



livello CERTIFIED

da 40 a 49 punti



livello SILVER

da 50 a 59 punti



livello GOLD

da 60 a 79 punti



livello PLATINUM

da 80 a 110 punti

Le aree tematiche in cui vengono suddivisi i Prerequisiti ed i Crediti sono le seguenti:

IP	Integrative Process
LT	Location and Transportation
SS	Sustainable Sites
WE	Water Efficiency
EA	Energy and Atmosphere
MR	Materials and Resources
IEQ	Indoor Environmental Quality
INN	Innovation
RP	Regional Priority

Si precisa che i Crediti Regionali (Regional Priority) non costituiscono una vera e propria area di verifica poiché vengono automaticamente assegnati (fino ad un massimo di 4 punti) nel caso di conseguimento di crediti di particolare rilevanza per il contesto in cui è ubicato l'edificio.

4 INDICAZIONI PER IL RAGGIUNGIMENTO DELLA CERTIFICAZIONE LEED BD+C V.4: NEW CONSTRUCTION

4.1 Minimum Program Requirements

Per l'ottenimento della certificazione LEED occorre verificare la presenza dei Requisiti Minimi di Certificazione ovvero che le caratteristiche di base dell'intervento siano adeguate per i seguenti punti:

- L'edificio certificato deve essere a carattere permanente e non può essere progettato per essere trasferito.
- Il confine della certificazione deve essere chiaramente identificabile, ovvero deve comprendere tutte le porzioni di sito interessate dal progetto e non può avere forme anomale atte a ricomprendere aree utili al solo fine di ottenere i crediti.
- La superficie lorda dell'edificio deve essere maggiore del 2% dell'area del sito all'interno del Project Boundary.
- L'edificio da certificare deve avere una superficie di almeno 1000ft² (93m²).

4.2 LEED Project Boundary

Il confine del progetto LEED deve soddisfare le seguenti condizioni:

- deve comprendere tutti i terreni contigui interessati dal progetto stesso;
- il confine del progetto LEED non può includere terreni appartenenti ad un proprietario diverso da quello del progetto, a meno che il terreno non sia disturbato dalle attività di costruzione del progetto stesso;
- ciascuna particella catastale di terreno può essere attribuita ad un solo edificio in corso di certificazione LEED;
- è vietata la contraffazione o falsa ridefinizione del confine del progetto LEED: il confine non può irrazionalmente escludere (o includere) porzioni di terreno al solo fine di creare confini di forme irragionevoli per adempiere in modo maggiormente favorevole alle richieste di prerequisiti o crediti.

Al fine della certificazione secondo il protocollo LEED l'edificio deve essere considerato nella sua interezza.

All'interno del LEED Project Boundary, che delimita la superficie certificata, saranno quindi incluse tutte le aree appartenenti all'edificio senza alcuna esclusione.

4.3 Modalità di analisi dei crediti

Si descrive ai fini esplicativi le modalità con cui viene riportata l'analisi fatta per ogni singolo credito e prerequisito.

Categoria di appartenenza	Indica l'area tematica di appartenenza del prerequisito/credito
Titolo del prerequisito/credito	Indica il nome del prerequisito/credito Il prerequisito ha carattere obbligatorio Il credito è opzionale e concorre alla definizione del punteggio
Punteggio	Indica il numero di punti perseguibili con il credito
Finalità	Rappresenta l'intento ambientale perseguito per quel prerequisito/credito
Requisiti	Sono indicate le soglie prestazionali richieste, gli eventuali riferimenti normativi ed eventuali ulteriori parametri oggettivi da soddisfare
Previsione ottenimento e punteggio	La tabellina indica se il credito sia stato considerato: <ul style="list-style-type: none"> ▪ ottenibile (SI) ▪ necessario svolgere valutazioni ulteriori (FORSE) ▪ non ottenibile (NO) È inoltre indicato il punteggio (se pur parziale) associato all'ottenimento del credito.
Analisi ottenimento del credito	in questa sezione sono inserite le indicazioni preliminari e le raccomandazioni più importanti che devono essere prese in considerazione per soddisfare i requisiti LEED associati al prerequisito/credito

I crediti per i quali sono disponibili punti di prestazione esemplare sono evidenziati con apposito logo.



Il raggiungimento della prestazione esemplare, che verranno verificate in sede di progettazione, richiede di perseguire un netto miglioramento del livello prestazionale normalmente richiesto dai crediti o una estensione degli obiettivi perseguiti dai crediti. Per l'ottenimento di punteggio aggiuntivo il gruppo di progettazione deve quindi raggiungere il livello di prestazione definito dal gradino successivo nella scala di valutazione di ciascun credito.

5 ANALISI DEI CREDITI LEED SUDDIVISI PER AREE TEMATICHE

5.1 Integrative Process (IP)

5.1.1 IP – Credito: Integrative Process



Punteggio: 1 punto

Requisiti

Beginning in pre-design and continuing throughout the design phases, identify and use opportunities to achieve synergies across disciplines and building systems. Use the analyses described below to inform the owner's project requirements (OPR), basis of design (BOD), design documents, and construction documents.

Energy Related Systems

Perform a preliminary "simple box" energy modeling analysis before the completion of schematic design that explores how to reduce energy loads in the building and accomplish related sustainability goals by questioning default assumptions. Assess at least two potential strategies associated with the following:

- Site conditions. Assess shading, exterior lighting, hardscape, landscaping, and adjacent site conditions.
- Massing and orientation. Assess how massing and orientation affect HVAC sizing, energy consumption, lighting, and renewable energy opportunities.
- Basic envelope attributes. Assess insulation values, window-to-wall ratios, glazing characteristics, shading, and window operability.
- Lighting levels. Assess interior surface reflectance values and lighting levels in occupied spaces.
- Thermal comfort ranges. Assess thermal comfort range options.
- Plug and process load needs. Assess reducing plug and process loads through programmatic solutions (e.g., equipment and purchasing policies, layout options).
- Programmatic and operational parameters. Assess multifunctioning spaces, operating schedules, space allotment per person, teleworking, reduction of building area, and anticipated operations and maintenance.

Water Related Systems

Perform a preliminary water budget analysis before the completion of schematic design that explores how to reduce potable water loads in the building and accomplish related sustainability goals. Assess and estimate the project's potential nonpotable water supply sources and water demand volumes, including the following:

- Indoor water demand. Assess flow and flush fixture design case demand volumes, calculated in accordance with WE Prerequisite Indoor Water-Use Reduction.
- Outdoor water demand. Assess landscape irrigation design case demand volume calculated in accordance with WE Credit Outdoor Water-Use Reduction.
- Process water demand. Assess kitchen, laundry, cooling tower, and other equipment demand volumes, as applicable.
- Supply sources. Assess all potential nonpotable water supply source volumes, such as on-site rainwater and graywater, municipally supplied nonpotable water, and HVAC equipment condensate.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 punto		

Analisi ottenimento del credito

Il credito è perseguibile compilando l' Integrative Process Worksheet e descrivendo il processo di Integrative Process, ossia l'adottare un approccio multidisciplinare nella progettazione e nel processo decisionale a partire dalla fase di programmazione e di progettazione iniziale.

5.2 Location and Transportation

5.2.1 LT – Credito: Sensitive Land Protection



Punteggio: 1 punto

Requisiti **OPZIONE 1**

Locate the development footprint on land that has been previously developed.


Previsione ottenimento e punteggio

SI	FORSE	NO
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		1 punto


Analisi ottenimento del credito

Il progetto si colloca su un'area parzialmente sviluppata precedentemente, ma non rientra nei criteri LEED perché le aree verde agricole non sono preservate..

5.2.2 LT – Credito: High-Priority Site



Punteggio: 1-2 punti



Requisiti OPZIONE 1 (2 PUNTI)

Locate the project on an infill location in a historic district.

**OPZIONE 2 (2 PUNTI)**

Locate the project on one of the following:

- a site listed by the EPA National Priorities List;
- a Federal Empowerment Zone site;
- a Federal Enterprise Community site;
- a Federal Renewal Community site;
- a Department of the Treasury Community Development Financial Institutions Fund Qualified Low-Income Community (a subset of the New Markets Tax Credit Program);
- a site in a U.S. Department of Housing and Urban Development's Qualified Census Tract (QCT) or Difficult Development Area (DDA); or
- a local equivalent program administered at the national level for projects outside the U.S.

**OPZIONE 3 (3 PUNTI)**

Locate on a brownfield where soil or groundwater contamination has been identified, and where the local, state, or national authority (whichever has jurisdiction) requires its remediation. Perform remediation to the satisfaction of that authority.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		2 punti

Analisi ottenimento del credito

L'edificio non rientra nelle classificazioni previste dal protocollo LEED e non prevede l'esecuzione di alcun intervento di bonifica a seguito della demolizione. Per questo motivo il Credito non è perseguito.

5.2.3 LT – Credito: Surrounding Density and Diverse Uses



Punteggio: 1-5 punti

Requisiti

OPZIONE 1 – Development and adjacency (2-3 punti)

Construct or renovate the project on a previously developed site that was used for industrial or commercial purposes (2 points).

OR

Construct or renovate the project on a site that is both a previously developed and an adjacent site. The adjacent sites must be currently used for industrial or commercial purposes (3 points).

OPZIONE 2 – Transportation resources (1-2 punti)

Construct or renovate the project on a site that has two or three (1 point) or four (2 points) of the following transportation resources:

- The site is within a 10-mile (16 kilometer) driving distance of a main logistics hub, defined as an airport, seaport, intermodal facility, or freight village with intermodal transportation.
- The site is within a 1-mile (1 600-meter) driving distance of an on-off ramp to a highway.
- The site is within a 1-mile (1 600-meter) driving distance of an access point to an active freight rail line.
- The site is served by an active freight rail spur.

In all cases, a planned transportation resource must be sited, funded, and under construction by the date of the certificate of occupancy and complete within 24 months of that date.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4 punti		1 punti

Analisi ottenimento del credito

Il progetto viene su un'area precedentemente svuolata, per questo motivo si ottengono due punti con l'Opzione 1. Ulteriori due punti si ottengono perché l'area risulta essere connessa nel raggio di 1km alla Cispadana SP 62, allineata ai criteri di Highway del LEED. Inoltre, la presenza della linee ferroviaria interna al sito permette di soddisfare gli altri criteri, ottenendo quindi i due punti disponibili.

5.2.4 LT – Credito: Access to Quality Transit



Punteggio: 1-5 punti



Requisiti Locate any functional entry of the project within a 1/4-mile (400-meter) walking distance of existing or planned bus, streetcar, or rideshare stops, or within a 1/2-mile (800-meter) walking distance of existing or planned bus rapid transit stops, light or heavy rail stations, commuter rail stations or commuter ferry terminals. The transit service at those stops and stations in aggregate must meet the minimums listed in Tables 1. Planned stops and stations may count if they are sited, funded, and under construction by the date of the certificate of occupancy and are complete within 24 months of that date.

TABLE 1. Minimum daily transit service for projects with multiple transit types (bus, streetcar, rail, or ferry)

Weekday Trips	Weekend Trips	Points BD+C (except Core and Shell)	Points BD+C (Core and Shell)
72	40	1	1
144	108	3	3
360	216	5	6

Both weekday and weekend trip minimums must be met.

- Qualifying transit routes must have paired route service (service in opposite directions).
- For each qualifying transit route, only trips in one direction are counted towards the threshold.
- If a qualifying transit route has multiple stops within the required walking distance, only trips from one stop are counted towards the threshold.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	1punti	4 punti

Analisi ottenimento del credito

Il progetto risulta non servito da trasporto pubblico che soddisfi le richieste LEED.

Per ottenere almeno il punto considerato in "Forse" servirà creare una fermata dell'autobus entro 400 m dall'ingresso e con frequenza giornaliera di almeno 72 corse.

5.2.5 LT – Credito: Bicycle Facilities



Punteggio: 1 punto

Requisiti Bicycle Network

Design or locate the project such that a functional entry or bicycle storage is within a 200-yard (180-meter) walking distance or bicycling distance from a bicycle network that connects to at least one of the following:

- at least 10 diverse uses (see Appendix 1);
- a school or employment center, if the project total floor area is 50% or more residential; or
- a bus rapid transit stop, light or heavy rail station, commuter rail station, or ferry terminal.

All destinations must be within a 3-mile (4800-meter) bicycling distance of the project boundary.

Planned bicycle trails or lanes may be counted if they are fully funded by the date of the certificate of occupancy and are scheduled for completion within one year of that date.

Bicycle Storage and Shower Rooms

Case 1. Commercial or Institutional Projects

Provide short-term bicycle storage for at least 2.5% of all peak visitors, but no fewer than four storage spaces per building.

Provide long-term bicycle storage for at least 5% of all regular building occupants, but no fewer than four storage spaces per building in addition to the short-term bicycle storage spaces.

Provide at least one on-site shower with changing facility for the first 100 regular building occupants and one additional shower for every 150 regular building occupants thereafter.


Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 punto		


Analisi ottenimento del credito

Il progetto prevede lo sviluppo di una pista ciclabile che collegherà il progetto al centro cittadino. Inoltre saranno previste almeno 47 posti bici e 8 docce per gli utenti, così da soddisfare le richieste del credito LEED.

5.2.6 LT – Credito: Reduced Parking Footprint



Punteggio: 1 punto



Requisiti **OPZIONE 1**

Do not exceed the minimum local code requirements for parking capacity.

Provide parking capacity that is a 30% reduction below the base ratios for parking spaces, by building type, found in Appendix 4. Table 1. Base Ratios for Parking.

Alternatively, projects may demonstrate baseline and reduced parking capacity using calculations for the most appropriate land use found in the Institute of Transportation Engineers (ITE) Parking Generation Manual, 5th Edition or a comparable and current resource applied by a qualified transportation engineer or planner.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 punto		

Analisi ottenimento del credito

Al fine dell'ottenimento del credito il progetto prevede un numero di posti auto inferiori ai 355. Tale valore di riferimento è stato ottenuto tramite i valori di riferimento definiti dal LEED.

5.2.7 LT – Credito: Green Vehicles



Punteggio: 1 punto

Requisiti OPZIONE 2 – Reduced Truck Idling

Provide an electrical connection for at least 50% of all dock door locations to limit truck idling at the dock.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 punto		

Analisi ottenimento del credito

Il progetto prevede l'installazione di un collegamento elettrico per almeno il 50% di tutte le banchine di carico/scarico per limitare al minimo il funzionamento dei motori dei camion in sosta. In tal modo le richieste del credito sono soddisfatte e il punteggio è ottenuto.

5.3 Sustainable Sites

5.3.1 SS – Prerequisito: Construction Activity Pollution Prevention



Punteggio: Obbligatorio

Requisiti

Create and implement an erosion and sedimentation control plan for all construction activities associated with the project. The plan must conform to the erosion and sedimentation requirements of the 2012 U.S. Environmental Protection Agency (EPA) Construction General Permit (CGP) or local equivalent, whichever is more stringent.

Projects must apply the CGP regardless of size. The plan must describe the measures implemented.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prerequisito		

Analisi ottenimento del credito

Il Prerequisito richiede che venga redatto e implementato un Piano di Controllo dell'Erosione e della Sedimentazione (Erosion and Sedimentation Control (ESC) Plan), conforme o più stringente al documento EPA 2012 Construction General Permit (CGP).

Il Piano per il Controllo dell'Erosione e della Sedimentazione (ESC Plan) individua le misure atte a prevenire l'erosione e la sedimentazione del suolo dovuta alle acque meteoriche, descrive il trattamento delle acque di dilavamento, descrive le operazioni di manutenzione, identifica il Responsabile delle attività relative. Sarà inoltre avviato un monitoraggio del cantiere e della sua documentazione attraverso report fotografici riportanti la data delle ispezioni.

5.3.2 SS – Credito: Site Assessment

**Punteggio: 1 punto**

Requisiti Complete and document a site survey or assessment¹ that includes the following information:

- Topography. Contour mapping, unique topographic features, slope stability risks.
- Hydrology. Flood hazard areas, delineated wetlands, lakes, streams, shorelines, rainwater collection and reuse opportunities, TR-55 initial water storage capacity of the site (or local equivalent for projects outside the U.S.).
- Climate. Solar exposure, heat island effect potential, seasonal sun angles, prevailing winds, monthly precipitation and temperature ranges.
- Vegetation. Primary vegetation types, greenfield area, significant tree mapping, threatened or endangered species, unique habitat, invasive plant species.
- Soils. Natural Resources Conservation Service soils delineation, U.S. Department of Agriculture prime farmland, healthy soils, previous development, disturbed soils (local equivalent standards may be used for projects outside the U.S.).
- Human use. Views, adjacent transportation infrastructure, adjacent properties, construction materials with existing recycle or reuse potential.
- Human health effects. Proximity of vulnerable populations, adjacent physical activity opportunities, proximity to major sources of air pollution.

The survey or assessment should demonstrate the relationships between the site features and topics listed above and how these features influenced the project design; give the reasons for not addressing any of those topics.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 punto		

Analisi ottenimento del credito

Il Credito è facilmente acquisibile ottemperando alla analisi ambientali richieste (es. analisi geologiche, geotecniche, idrogeologiche, etc.). Le analisi condotte sul sito sono allineate a quanto richiesto dal protocollo LEED.

In fase di sottomissione sarà necessario compilare il Site Assessment Worksheet.

5.3.3 SS – Credito: Protect or Restore Habitat



Punteggio: 1-2 punti



Requisiti Preserve and protect from all development and construction activity 40% of the greenfield area on the site (if such areas exist).

E

OPTION 1

Using native or adapted vegetation, restore 30% (including the building footprint) of all portions of the site identified as previously developed. Projects that achieve a density of 1.5 floor-area ratio may include vegetated roof surfaces in this calculation if the plants are native or adapted, provide habitat, and promote biodiversity.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		2 punti

Analisi ottenimento del credito

Il progetto trasforma tutte le aree verdi presenti, per cui il credito non è perseguibile

5.3.4 SS – Credit: Open Space



Punteggio: 1 punto

Requisiti

Provide outdoor space greater than or equal to 30% of the total site area (including building footprint).

At least 25% of the required outdoor open space must be vegetated space planted with two or more types of vegetation or have overhead vegetated canopy.

The outdoor space must be physically accessible and be one or more of the following:

- social area: a pedestrian-oriented paving or landscape area that accommodate outdoor social activities;
- recreational area: a recreation-oriented paving or landscape area that encourage physical activity;
- diverse green space: a landscape area with two or more types of vegetation that provide opportunities for year-round visual interest;
- garden: a garden space dedicated to community gardens or urban food production; or
- habitat area: preserved or created habitat that meets the criteria of SS Credit Protect or Restore Habitat and includes elements of human interaction. These areas automatically meet the vegetation criteria of this credit.

Extensive or intensive vegetated roofs that are physically accessible can be used toward the minimum vegetation requirement, and qualifying roof-based physically accessible paving areas can be used toward credit compliance.

Wetlands or naturally designed ponds may count as open space if the side slope gradients average 1:4 (vertical:horizontal) or less and are vegetated.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		1 punto

Analisi ottenimento del credito

Il credito non viene perseguito poiché risulta non compatibile con la funzionalità del sito.

5.3.5 SS – Credito: Rainwater Management



Punteggio: 1-3 punti

**Requisiti** **OPZIONE 1**

In a manner best replicating natural site hydrology processes, retain on site the runoff from the associated percentile of regional or local rainfall events. The percentile event volume must be retained (i.e. infiltrated, evapotranspired, or collected and reused) using low-impact development (LID) and green infrastructure (GI) practices. GI and LID strategies can be either structural or non-structural. Points are awarded according to Table 1.

Table 1. Points for percentile of rainfall retained

All Projects	Zero lot line Projects	Points	Points Healthcare
80 th Percentile	70 th Percentile	1	1
85 th Percentile	75 th Percentile	2	2
90 th Percentile	80 th Percentile	3	-

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 punti		

Analisi ottenimento del credito

Il progetto, al fine di perseguire pienamente il credito, ha adottato diverse strategie al fine di gestire il volume di acque meteoriche di riferimento del progetto, tra cui vasche di accumulo, pozzi perdenti e il riutilizzo per i sistemi di irrigazione e la rete duale dei sanitari. Per questo credito si adotta la versione LEED v4.1

5.3.6 SS – Credito: Heat Island Reduction



Punteggio: 1-2 punti



Requisiti

OPZIONE 1

Meet the following criterion:

$$\frac{\text{Area of Nonroof Measures}}{0.5} + \frac{\text{Area of High-Reflectance Roof}}{0.75} + \frac{\text{Area of Vegetated Roof}}{0.75} \geq \frac{\text{Total Site Paving Area}}{\text{Total Roof Area}}$$

Alternatively, an SRI and SR weighted average approach may be used to calculate compliance.

Use any combination of the following strategies:

Nonroof Measures

- Use the existing plant material or install plants that provide shade over paving areas (including playgrounds) on the site within 10 years of planting. Install vegetated planters. Plants must be in place at the time of occupancy permit and cannot include artificial turf.
- Provide shade with structures covered by energy generation systems, such as solar thermal collectors, photovoltaics, and wind turbines.
- Provide shade with architectural devices or structures that have a three-year aged solar reflectance (SR) value of at least 0.28. If three-year aged value information is not available, use materials with an initial SR of at least 0.33 at installation.
- Provide shade with vegetated structures.
- Use paving materials with a three-year aged solar reflectance (SR) value of at least 0.28. If three-year aged value information is not available, use materials with an initial SR of at least 0.33 at installation.
- Use an open-grid pavement system (at least 50% unbound)

High-Reflectance Roof

Use roofing materials that have an SRI equal to or greater than the values in Table 1. Meet the three-year aged SRI value. If three-year aged value information is not available, use materials that meet the initial SRI value.

TABLE 1. Minimum solar reflectance index value, by roof slope

	Slope	Initial SRI	3-year aged SRI
Low-sloped roof	≤ 2:12	82	64
Steep-sloped roof	> 2:12	39	32

Vegetated Roof

Install a vegetated roof.

0

OPZIONE 2

Place a minimum of 75% of parking spaces under cover. Any roof used to shade or cover parking must (1) have a three-year aged SRI of at least 32 (if three-year aged value information is not available, use materials with an initial SRI of at least 39 at installation), (2) be a vegetated roof, or (3) be covered by energy generation systems, such as solar thermal collectors, photovoltaics, and wind turbines.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 punti		

Analisi ottenimento del credito

Per l'ottenimento del credito dovrà essere previsto in copertura un materiale bianco, con SRI>95, per le parti non coperte dal campo fotovoltaico. Per la parte di pavimentazioni esterne sarà necessario utilizzare un materiale di colore chiaro con SR>0.33 testato in tutte le sue componenti.

Saranno inserite a capitolato le richieste di SRI e SR da rispettare per le varie superfici in maniera che siano rispettate le richieste del protocollo LEED. La valutazione effettiva del soddisfacimento si potrà fare solo in fase di definizione dei materiali, applicando i reali valori dei prodotti usati.

5.3.7 SS – Credito: Light Pollution Reduction



Punteggio: 1 punto

Requisiti Meet uplight and light trespass requirements, using either the backlight-uplight-glare (BUG) method (Option 1). Projects may use different options for uplight and light trespass.

Uplight

OPZIONE 1

Do not exceed the following luminaire uplight ratings, based on the specific light source installed in the luminaire, as defined in IES TM-15-11, Addendum A.

TABLE 1. Maximum uplight ratings for luminaires

MLO lighting zone	Luminaire uplight rating
LZ0	U0
LZ1	U1
LZ2	U2
LZ3	U3
LZ4	U4

E

Light Trepass

OPZIONE 1

Do not exceed the following luminaire backlight and glare ratings (based on the specific light source installed in the luminaire), as defined in IES TM-15-11, Addendum A, based on the mounting location and distance from the lighting boundary.

TABLE 3. Maximum backlight and glare ratings

	MLO lighting zone				
Luminaire mounting	LZ0	LZ1	LZ2	LZ3	LZ4
Allowed backlight ratings					
> 2 mounting heights from lighting boundary	B1	B3	B4	B5	B5
1 to 2 mounting heights from lighting boundary and properly oriented	B1	B2	B3	B4	B4
0.5 to 1 mounting height to lighting boundary and properly oriented	B0	B1	B2	B3	B3
< 0.5 mounting height to lighting boundary and properly oriented	B0	B0	B0	B1	B2
Allowed glare ratings					
Building-mounted > 2 mounting heights from any lighting boundary	G0	G1	G2	G3	G4
Building-mounted 1-2 mounting heights from any lighting boundary	G0	G0	G1	G1	G2
Building-mounted 0.5 to 1 mounting heights from any lighting boundary	G0	G0	G0	G1	G1
Building-mounted < 0.5 mounting heights from any lighting boundary	G0	G0	G0	G0	G1
All other luminaires	G0	G1	G2	G3	G4

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 punto		

Analisi ottenimento del credito

Il progetto mira ad installare un impianto di illuminazione esterna tale che la dispersione luminosa non oltrepassi il confine del sito di progetto e che sia contenuta verso l'alto tramite schermature di tipo cut-off o simili. e prevedere corpi illuminanti con schermatura della luce verso l'alto.

Data l'area di progetto, assimilabile ad una zona con limitata luce ambientale, prevedere luci esterne che abbiano mediamente tali caratteristiche: B1 U1 G0

5.4 Water Efficiency

5.4.1 WE – Prerequisito: Outdoor Water Use Reduction

WE: Outdoor Water Use Reduction



Obbligatorio

Requisiti

Reduce outdoor water use through one of the following options. Nonvegetated surfaces, such as permeable or impermeable pavement, should be excluded from the landscape area calculations. Athletic fields and playgrounds (if vegetated) and food gardens may be included or excluded at the project team's discretion.

OPZIONE 2

Reduce the project's landscape water requirement by at least 30% from the calculated baseline for the site's peak watering month. Reductions must be achieved through plant species selection and irrigation system efficiency, as calculated by the Environmental Protection Agency (EPA) WaterSense Water Budget Tool.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prerequisito		

Analisi ottenimento del credito

Il progetto mira a contenere i consumi idrici delle aree esterne tramite l'adozione di strategie mirate alla riduzione del fabbisogno idrico, quali la scelta di specie vegetali autoctone, a bassa richiesta idrica e favorendo piantumazione di alberi e arbusti invece di aree a prato. Sarà inoltre designato un sistema di irrigazione efficiente ed integrato di vasca di raccolta che permetterà di ottimizzare la performance idrica.

5.4.2 WE – Prerequisito: Indoor Water Use Reduction



Obbligatorio

Requisiti Consumi di acqua dell'edificio

For the fixtures and fittings listed in Table 1, as applicable to the project scope, reduce aggregate water consumption by 20% from the baseline. Base calculations on the volumes and flow rates shown in Table 1.

All newly installed toilets, urinals, private lavatory faucets, and showerheads that are eligible for labeling must be WaterSense labeled (or a local equivalent for projects outside the U.S.).

TABLE 1. Baseline water consumption of fixtures and fittings		
Fixture or fitting	Baseline (IP units)	Baseline (SI units)
Toilet (water closet)*	1.6 gpf	6 lpf
Urinal*	1.0 gpf	3.8 lpf
Public lavatory (restroom) faucet	0.5 gpm at 60 psi all others except private applications	1.9 lpm at 415 kPa, all others except private applications
Private lavatory faucets	2.2 gpm at 60 psi	8.3 lpm at 415 kPa
Kitchen faucet (excluding faucets used exclusively for filling operations)	2.2 gpm at 60 psi	8.3 lpm at 415 kPa
Showerhead*	2.5 gpm at 80 psi per shower stall	9.5 lpm at 550 kPa per shower stall

*WaterSense label available for this product type

Consumi di acqua di processo

Install appliances, equipment, and processes within the project scope that meet the requirements listed in the tables below.

TABLE 2. Standards for appliances	
Appliance	Requirement
Residential clothes washers	ENERGY STAR or performance equivalent
Commercial clothes washers	CEE Tier 3A
Residential dishwashers (standard and compact)	ENERGY STAR or performance equivalent
Pre-rinse spray valves	≤ 1.3 gpm (4.9 lpm)
Ice machine	ENERGY STAR or performance equivalent and use either air-cooled or closed-loop cooling, such as chilled or condenser water system

gpm = gallons per minute lpm = liters per minute

TABLE 3. Standards for processes	
Process	Requirement
Heat rejection and cooling	No once-through cooling with potable water for any equipment or appliances that reject heat
Cooling towers and evaporative condensers	Equip with <ul style="list-style-type: none"> • makeup water meters • conductivity controllers and overflow alarms • efficient drift eliminators that reduce drift to maximum of 0.002% of recirculated water volume for counterflow towers and 0.005% of recirculated water flow for cross-flow towers

gpm = gallons per minute lpm = liters per minute

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prerequisito		

Analisi ottenimento del credito

Il progetto prevede apparecchiature con i seguenti consumi idrici massimi:

- WC doppio scarico 2/4 litri;
- docce 5,7 l/min
- rubinetti bagni: massimo 1,9 l/min

Tali portate permettono di avere una riduzione di almeno il 20% come richiesto dal prerequisito.

5.4.3 WE – Prerequisito: Building Level Water Metering



Obbligatorio

Requisiti

Install permanent water meters that measure the total potable water use for the building and associated grounds. Meter data must be compiled into monthly and annual summaries; meter readings can be manual or automated.

Commit to sharing with USGBC the resulting whole-project water usage data for a five-year period beginning on the date the project accepts LEED certification or typical occupancy, whichever comes first.

This commitment must carry forward for five years or until the building changes ownership or lessee.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prerequisito		

Analisi ottenimento del credito

Il prerequisito LEED prevede che siano installati contatori che permettano di misura i consumi di acqua potabile nell'edificio e terreni adiacenti. Il progetto è allineato alle richieste e per questo il prerequisito si ritiene perseguito.

5.4.4 WE – Credito: Outdoor Water Use Reduction



Punteggio: 1-2 punti

Requisiti

Reduce outdoor water use through one of the following options. Nonvegetated surfaces, such as permeable or impermeable pavement, should be excluded from the landscape area calculations. Athletic fields and playgrounds (if vegetated) and food gardens may be included or excluded at the project team's discretion.

OPZIONE 2

Reduce the project's landscape water requirement by at least 30% from the calculated baseline for the site's peak watering month. Reductions must be achieved through plant species selection and irrigation system efficiency, as calculated by the Environmental Protection Agency (EPA) WaterSense Water Budget Tool. .

TABLE 1. Points for reducing irrigation water

Percentage reduction from baseline	Points (except Healthcare)	Points (Healthcare)
50%	1	1
100%	2	—

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 punti		

Analisi ottenimento del credito

Il progetto mira a contenere i consumi idrici delle aree esterne tramite l'adozione di strategie mirate alla riduzione del fabbisogno idrico, quali la scelta di specie vegetali autoctone, a bassa richiesta idrica e favorendo piantumazione di alberi e arbusti invece di aree a prato. Sarà inoltre designato un sistema di irrigazione efficiente ed integrato di vasca di raccolta che permetterà di ottimizzare la performance idrica. Si prevede di ridurre i consumi del 100% rispetto alla baseline LEED e di ottenere il punteggio.

5.4.5 WE – Credito: Indoor Water Use Reduction



Punteggio: 1-5 punti

Requisiti

Further reduce fixture and fitting water use from the calculated baseline in WE Prerequisite Indoor Water Use Reduction. Additional potable water savings can be earned above the prerequisite level using alternative water sources. Include fixtures and fittings necessary to meet the needs of the occupants. Some of these fittings and fixtures may be outside the tenant space (for Commercial Interiors) or project boundary (for New Construction). Points are awarded according to Table 1.:

TABLE 1. Points for reducing water use		
Percentage reduction	Points (BD+C)	Points (Schools, Retail, Hospitality, Healthcare)
25%	1	1
30%	2	2
35%	3	3
40%	4	4
45%	5	5
50%	6	—

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 punti		

Analisi ottenimento del credito

Il progetto prevede apparecchiature con i seguenti consumi idrici massimi:

- WC doppio scarico 2/4 litri;
- docce 5,7 l/min
- rubinetti bagni: massimo 1,9 l/min

Con tali portate e l'inserimento della rete duale si ottiene una riduzione di oltre il 50% dei consumi interni e l'ottenimento dei 6 punti disponibili.

5.4.6 WE – Credit: Cooling Tower Water Use



Punteggio: 1-2 punti

Requisiti For cooling towers and evaporative condensers, conduct a one-time potable water analysis, measuring at least the five control parameters listed in Table 1.

TABLE 1. Maximum concentrations for parameters in condenser water

Parameter	Maximum level
Ca (as CaCO ₃)	1000 ppm
Total alkalinity	1000 ppm
SiO ₂	100 ppm
Cl ⁻	250 ppm
Conductivity	2000 μS/cm

ppm = parts per million

μS/cm = micro siemens per centimeter

Calculate the maximum number of cooling tower cycles by dividing the maximum allowed concentration level of each parameter by the actual concentration level of each parameter found in the potable makeup water analysis. Limit cooling tower cycles to avoid exceeding maximum values for any of these parameters.

TABLE 2. Points for cooling tower cycles

Cooling tower cycles	Points
Maximum number of cycles achieved without exceeding any filtration levels or affecting operation of condenser water system (up to maximum of 10 cycles)	1
Achieve a minimum 10 cycles by increasing the level of treatment in condenser or make-up water OR Meet the minimum number of cycles to earn 1 point and use a minimum 20% recycled nonpotable water	2

Previsione ottenimento e punteggio

SI	FORSE	NO
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		2 punti

Analisi ottenimento del credito

Il progetto non prevede l'utilizzo della torre evaporativa, per questo motivo non è possibile ottenere il punteggio a disposizione.

5.4.7 WE – Credit: Water Metering



Punteggio: 1 punto

Requisiti

Install permanent water meters for two or more of the following water subsystems, as applicable to the project:

- Irrigation. Meter water systems serving at least 80% of the irrigated landscaped area. Calculate the percentage of irrigated landscape area served as the total metered irrigated landscape area divided by the total irrigated landscape area. Landscape areas fully covered with xeriscaping or native vegetation that requires no routine irrigation may be excluded from the calculation.
- Indoor plumbing fixtures and fittings. Meter water systems serving at least 80% of the indoor fixtures and fitting described in WE Prerequisite Indoor Water Use Reduction, either directly or by deducting all other measured water use from the measured total water consumption of the building and grounds.
- Domestic hot water. Meter water use of at least 80% of the installed domestic hot water heating capacity (including both tanks and on-demand heaters).
- Boiler with aggregate projected annual water use of 100,000 gallons (378 500 liters) or more, or boiler of more than 500,000 BtuH (150 kW). A single makeup meter may record flows for multiple boilers.
- Reclaimed water. Meter reclaimed water, regardless of rate. A reclaimed water system with a makeup water connection must also be metered so that the true reclaimed water component can be determined.
- Other process water. Meter at least 80% of expected daily water consumption for process end uses, such as humidification systems, dishwashers, clothes washers, pools, and other subsystems using process water

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 punto		

Analisi ottenimento del credito

Il progetto prevede di installare dei contatori idrici per avere la valutazione complessiva dei consumi dei seguenti servizi:

- Irrigazione,
- ACS

Questo rende possibile ottenere il punto previsto dal credito LEED:

5.5 Energy and Atmosphere

5.5.1 EA – Prerequisito: Fundamental Commissioning and Verification



Obbligatorio

Requisiti

Complete the following commissioning (Cx) process activities for mechanical, electrical, plumbing, and renewable energy systems and assemblies, in accordance with ASHRAE Guideline 0-2005 and ASHRAE Guideline 1.1-2007 for HVAC&R Systems, as they relate to energy, water, indoor environmental quality, and durability. Requirements for exterior enclosures are limited to inclusion in the owner's project requirements (OPR) and basis of design (BOD), as well as the review of the OPR, BOD and project design. NIBS Guideline 3-2012 for Exterior Enclosures provides additional guidance.

- Develop the OPR.
- Develop a BOD.

The commissioning authority (CxA) must do the following:

- Review the OPR, BOD, and project design.
- Develop and implement a Cx plan.
- Confirm incorporation of Cx requirements into the construction documents.
- Develop construction checklists.
- Develop a system test procedure.
- Verify system test execution.
- Maintain an issues and benefits log throughout the Cx process.
- Prepare a final Cx process report.
- Document all findings and recommendations and report directly to the owner throughout the process.
- The review of the exterior enclosure design may be performed by a qualified member of the design or construction team (or an employee of that firm) who is not directly responsible for design of the building envelope.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prerequisito		

Analisi ottenimento del credito

In fase di Progetto verranno preparati l'OPR e il BOD, in collaborazione con la proprietà. Questi documenti avranno lo scopo di capire cosa la proprietà intende ottenere e raggiungere come prestazioni dal sistema impiantistico e di involucro dell'edificio.

5.5.2 EA – Prerequisito: Minimum Energy Performance



Obbligatorio

Requisiti **OPZIONE 1:**

Demonstrate an improvement of 5% for new construction, 3% for major renovations, or 2% for core and shell projects in the proposed building performance rating compared with the baseline building performance rating. Calculate the baseline building performance according to ANSI/ASHRAE/IESNA Standard 90.1–2010, Appendix G, with errata (or a USGBC-approved equivalent standard for projects outside the U.S.), using a simulation model.

Projects must meet the minimum percentage savings before taking credit for renewable energy systems. The proposed design must meet the following criteria:

- compliance with the mandatory provisions of ANSI/ASHRAE/IESNA Standard 90.1–2010, with errata (or a USGBC-approved equivalent standard for projects outside the U.S.);
- inclusion of all energy consumption and costs within and associated with the building project; and
- comparison against a baseline building that complies with Standard 90.1–2010, Appendix G, with errata (or a USGBC-approved equivalent standard for projects outside the U.S.).

Document the energy modeling input assumptions for unregulated loads. Unregulated loads should be modeled accurately to reflect the actual expected energy consumption of the building.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prerequisito		

Analisi ottenimento del credito

Il progetto prevede di rispettare le prescrizioni della normativa ASHRAE 90.1-2010 e le sue Mandatory Provision per la progettazione della parte impiantistica ed involucro.

La modellazione energetica in regime dinamico verrà realizzata nelle fasi successive di progettazione.

5.5.3 EA – Prerequisito: Building Level Energy Metering



Obbligatorio

Requisiti

Install new or use existing building-level energy meters, or submeters that can be aggregated to provide buildinglevel data representing total building energy consumption (electricity, natural gas, chilled water, steam, fuel oil, propane, biomass, etc). Utility-owned meters capable of aggregating building-level resource use are acceptable.

Commit to sharing with USGBC the resulting energy consumption data and electrical demand data (if metered) for a five-year period beginning on the date the project accepts LEED certification. At a minimum, energy consumption must be tracked at one-month intervals.

This commitment must carry forward for five years or until the building changes ownership or lessee.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prerequisito		

Analisi ottenimento del credito

Il sistema di contabilizzazione progettato risulta capace di misurare il consumo energetico dell'intero edificio. Il sistema deve prevedere almeno un contabilizzatore per ogni fonte energetica presente in sito.

5.5.4 EA – Prerequisito: Fundamental Refrigerant Management



Obbligatorio

Requisiti

Do not use chlorofluorocarbon (CFC) or hydro chlorofluorocarbon (HCFC) -based refrigerants in new heating, ventilating, air-conditioning, and refrigeration (HVAC&R) systems. When reusing existing HVAC&R equipment, complete a comprehensive CFC and/or HCFC phase-out conversion before project completion. Phase-out plans extending beyond the project completion date will be considered on their merits.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prerequisito		

Analisi ottenimento del credito

La normativa vigente nazionale permette la verifica automatica del prerequisito.

5.5.5 EA – Credito: Enhanced Commissioning



Punteggio: 2-6 punti

Requisiti **OPZIONE 1****Path 1: Commissioning Avanzato (3 punti)**

Complete the following commissioning process (CxP) activities for mechanical, electrical, plumbing, and renewable energy systems and assemblies in accordance with ASHRAE Guideline 0–2005 and ASHRAE Guideline 1.1–2007 for HVAC&R systems, as they relate to energy, water, indoor environmental quality, and durability.

The commissioning authority must do the following:

- Review contractor submittals.
- Verify inclusion of systems manual requirements in construction documents.
- Verify inclusion of operator and occupant training requirements in construction documents.
- Verify systems manual updates and delivery.
- Verify operator and occupant training delivery and effectiveness.
- Verify seasonal testing.
- Review building operations 10 months after substantial completion.
- Develop an on-going commissioning plan.

Include all enhanced commissioning tasks in the OPR and BOD

**Path 2: Commissioning e Monitoring Avanzato (4 punti)**

Achieve Path 1.

Develop monitoring-based procedures and identify points to be measured and evaluated to assess performance of energy- and water-consuming systems.

Include the procedures and measurement points in the commissioning plan. Address the following:

- roles and responsibilities;
- measurement requirements (meters, points, metering systems, data access);
- the points to be tracked, with frequency and duration for trend monitoring;
- the limits of acceptable values for tracked points and metered values (where appropriate, predictive algorithms may be used to compare ideal values with actual values);
- the elements used to evaluate performance, including conflict between systems, out-of-sequence operation of systems components, and energy and water usage profiles;
- an action plan for identifying and correcting operational errors and deficiencies;
- training to prevent errors;
- planning for repairs needed to maintain performance; and
- the frequency of analyses in the first year of occupancy (at least quarterly).

Update the systems manual with any modifications or new settings, and give the reason for any modifications from the original design.



OPZIONE 2**Commissioning dell'involucro (2 punti)**

Fulfill the requirements in EA Prerequisite Fundamental Commissioning and Verification as they apply to the building's thermal envelope in addition to mechanical and electrical systems and assemblies.

Complete the following commissioning process (CxP) activities for the building's thermal envelope in accordance with ASHRAE Guideline 0-2005 and the National Institute of Building Sciences (NIBS) Guideline 3-2012, Exterior Enclosure Technical Requirements for the Commissioning Process, as they relate to energy, water, indoor environmental quality, and durability.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6 punti		

Analisi ottenimento del credito

In fase di costruzione l'attività della Commissioning Authority sarà quella di verificare che i sistemi installati rispettino gli obiettivi della proprietà.

Attivando le varie opzioni del credito che conferiscono punteggio sarà necessario eseguire appositi test in loco per verificare le prestazioni.

5.5.6 EA – Credito: Optimize Energy Performance



Punteggio: 1-18 punti



Requisiti OPZIONE 1 (1-18 punti)

Analyze efficiency measures during the design process and account for the results in design decision making. Use energy simulation of efficiency opportunities, past energy simulation analyses for similar buildings, or published data (e.g., Advanced Energy Design Guides) from analyses for similar buildings.

Analyze efficiency measures, focusing on load reduction and HVAC-related strategies (passive measures are acceptable) appropriate for the facility. Project potential energy savings and holistic project cost implications related to all affected systems.

Project teams pursuing the Integrative Process credit must complete the basic energy analysis for that credit before conducting the energy simulation. Follow the criteria in EA Prerequisite Minimum Energy Performance to demonstrate a percentage improvement in the proposed building performance rating compared with the baseline. Points are awarded according to Table 1

TABLE 1. Points for percentage improvement in energy performance

New Construction	Major Renovation	Core and Shell	Points (except Schools, Healthcare)	Points (Healthcare)	Points (Schools)
6%	4%	3%	1	3	1
8%	6%	5%	2	4	2
10%	8%	7%	3	5	3
12%	10%	9%	4	6	4
14%	12%	11%	5	7	5
16%	14%	13%	6	8	6
18%	16%	15%	7	9	7
20%	18%	17%	8	10	8
22%	20%	19%	9	11	9
24%	22%	21%	10	12	10
26%	24%	23%	11	13	11
29%	27%	26%	12	14	12
18%	16%	15%	7	9	7
20%	18%	17%	8	10	8
22%	20%	19%	9	11	9
24%	22%	21%	10	12	10
26%	24%	23%	11	13	11
29%	27%	26%	12	14	12
32%	30%	29%	13	15	13
35%	33%	32%	14	16	14
38%	36%	35%	15	17	15
42%	40%	39%	16	18	16
46%	44%	43%	17	19	-
50%	48%	47%	18	20	-

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
18 punti		

Analisi ottenimento del credito

Il progetto prevede di rispettare le prescrizioni della normativa ASHRAE 90.1-2010, mandatory provisions 5.4, 6.4, 7.4, 8.4, 9.4, 10.4 per la progettazione della parte impiantistica ed involucro. Dato l'ampio utilizzo di fonte rinnovabili in loco (al momento considerate tra i 2,8MW e i 5MW di fotovoltaico) si ritiene perseguibile il massimo punteggio del credito. Questo verrà confermato tramite la modellazione energetica in regime dinamico.

5.5.7 EA – Credito: Advanced Energy Metering



Punteggio: 1 punto

Requisiti Install advanced energy metering for the following:

- all whole-building energy sources used by the building; and
- any individual energy end uses that represent 10% or more of the total annual consumption of the building.

The advanced energy metering must have the following characteristics.

- Meters must be permanently installed, record at intervals of one hour or less, and transmit data to a remote location.
- Electricity meters must record both consumption and demand. Whole-building electricity meters should record the power factor, if appropriate.
- The data collection system must use a local area network, building automation system, wireless network, or comparable communication infrastructure.
- The system must be capable of storing all meter data for at least 36 months.
- The data must be remotely accessible.
- All meters in the system must be capable of reporting hourly, daily, monthly, and annual energy use.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 punto		

Analisi ottenimento del credito

Il progetto prevede di installare un sistema di contabilizzazione dotato di diversi misuratori che monitorino i consumi energetici termici ed elettrici.

A seguito della definizione dei consumi del progetto tramite modellazione energetica sarà necessario che tutti i sistemi che rappresentano più del 10% dei consumi complessivi siano monitorati.

I contabilizzatori devono avere le seguenti caratteristiche:

- Devono essere permanentemente installati;
- Devono poter registrare i consumi energetici con intervallo orario, o inferiore;
- Devono poter trasmettere i dati registrati in remoto.
- I contabilizzatori elettrici devono poter misurare sia l'energia che la potenza istantanea.
- Il sistema di registrazione dei consumi energetici deve funzionare attraverso il sistema BMS o una rete wireless;
- Il sistema di monitoraggio deve essere capace di registrare e memorizzare i dati per almeno 36 mesi.
- I dati devono poter essere accessibili da remoto.
- Tutti i contabilizzatori devono poter riportare il consumo energetico su base annuale, mensile, giornaliera e oraria.

5.5.8 EA – Credito: Demand Response



Punteggio: 2 punti

Requisiti Design building and equipment for participation in demand response programs through load shedding or shifting. On-site electricity generation does not meet the intent of this credit.

Caso 1: Demand Response Program Available (2 punti)

- Participate in an existing demand response (DR) program and complete the following activities. the DR processes in the scope of work for the commissioning authority, including participation in at least one full test of the DR plan..

Caso 2: Demand Response Program Not Available (1 punti)

Provide infrastructure to take advantage of future demand response programs or dynamic, real-time pricing programs and complete the following activities.

- Install interval recording meters with communications and ability for the building automation system to accept an external price or control signal.
- Develop a comprehensive plan for shedding at least 10% of building estimated peak electricity demand. Peak demand is determined under EA Prerequisite Minimum Energy Performance.
- Include the DR processes in the scope of work for the commissioning authority, including participation in at least one full test of the DR plan.
- Contact local utility representatives to discuss participation in future DR programs.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		1punti

Analisi ottenimento del credito

Credito non perseguibile.

5.5.9 EA – Credito: Renewable Energy Production



Punteggio: 3 punti



Requisiti Use renewable energy systems to offset building energy costs. Calculate the percentage of renewable energy with the following equation:

$$\% \text{ renewable energy} = \frac{\text{Equivalent cost of usable energy produced by the renewable energy system}}{\text{Total building annual energy cost}}$$

Use the building's annual energy cost, calculated in EA Prerequisite Minimum Energy Performance, if Option 1 was pursued; otherwise use the U.S. Department of Energy's Commercial Buildings Energy Consumption Survey (CBECS) database to estimate energy use and cost.

The use of solar gardens or community renewable energy systems is allowed if both of the following requirements are met.

- The project owns the system or has signed a lease agreement for a period of at least 10 years.
- The system is located with the same utility service area as the facility claiming the use.

Points are awarded according to Table 1.

TABLE 1. Points for renewable energy		
Percentage renewable energy	Points (All, except Core and Shell)	Points (Core and Shell)
1%	1	1
3%	—	2
5%	2	3
10%	3	—

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 punti		

Analisi ottenimento del credito

Nonostante il punteggio sia legato ai consumi annuali, che vengono calcolati con la modellazione energetica dinamica, si considera di poter coprire almeno il 10% dei consumi e ottenere il massimo punteggio, grazie al parco fotovoltaico previsto.

Si ritiene inoltre facilmente perseguibile anche la prestazione esemplare che richiede di coprire il 15% del fabbisogno annuo.

5.5.10 EA – Credito: Enhanced Refrigerant Management



Punteggio: 1 punto

Requisiti

OPZIONE 2

Select refrigerants that are used in heating, ventilating, air-conditioning, and refrigeration (HVAC&R) equipment to minimize or eliminate the emission of compounds that contribute to ozone depletion and climate change. The combination of all new and existing base building and tenant HVAC&R equipment that serve the project must comply with the following formula:

$$LCGWP + LCODP \cdot 10^5 \leq 13 \text{ (unità SI)}$$

For multiple types of equipment, calculate a weighted average of all base building HVAC&R equipment, using the following formula:

CALCULATION DEFINITIONS FOR (SI UNITS)

$$\frac{\sum \left[\left(LCGWP + LCODP \times 10^5 \right) \times Q_{unit} \right]}{Q_{total}} \leq 13$$

Q_{unit} = Eurovent Certified cooling capacity of an individual HVAC or refrigeration unit (kW)

Q_{total} = Total Eurovent Certified cooling capacity of all HVAC or refrigeration (kW)

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 punto		

Analisi ottenimento del credito

Il progetto mira ad utilizzare impianti con refrigeranti a basso impatto ambientale (es R134A, R245FA, etc.) e privilegiando sistemi idronici ai sistemi tipo VRF/VRV.

5.5.11 EA – Credito: Green Power and Carbon Offsets



Punteggio: 1-2 punti

Requisiti Engage in a contract for qualified resources that have come online since January 1, 2005, for a minimum of five years, to be delivered at least annually. The contract must specify the provision of at least 50% or 100% of the project's energy from green power, carbon offsets, or renewable energy certificates (RECs).

Green power and RECs must be Green-e Energy certified or the equivalent. RECs can only be used to mitigate the effects of Scope 2, electricity use. Carbon offsets may be used to mitigate Scope 1 or Scope 2 emissions on a metric ton of carbon dioxide— equivalent basis and must be Green-e Climate certified, or the equivalent.

TABLE 1. Points for energy from green power or carbon offsets

Percentage of total energy addressed by green power, RECs and/or offsets	Points
50%	1
100%	2

Use the project's annual energy consumption, calculated in EA Prerequisite Minimum Energy Performance.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 punti		

Analisi ottenimento del credito

Il progetto prevede di stipulare un contratto per la fornitura di risorse qualificate, della durata di almeno 5 anni e con consegna almeno annuale. Questo consente l'ottenimento del credito. Il contratto specificherà che il 100% della fornitura di energia del progetto deriva da energia verde (GO "Garanzia di Origine").

5.6 Materials and Resources

5.6.1 MR – Prerequisito: Storage and Collection of Recyclables



Obbligatorio

Requisiti Provide dedicated areas accessible to waste haulers and building occupants for the collection and storage of recyclable materials for the entire building. Collection and storage areas may be separate locations. Recyclable materials must include mixed paper, corrugated cardboard, glass, plastics, and metals. Take appropriate measures for the safe collection, storage, and disposal of two of the following: batteries, mercury-containing lamps, and electronic waste.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prerequisito		

Analisi ottenimento del credito

Il progetto dimensionerà un locale per la raccolta centrale dei rifiuti prodotti (carta, cartone, vetro, plastica, metalli, umido, indifferenziata) nell'edificio durante la fase di esercizio.

Saranno previsti anche aree per lo smaltimento di almeno due dei seguenti rifiuti:

- batterie
- rifiuti elettronici
- lampade contenenti mercurio.

5.6.2 MR – Prerequisito: Construction and Demolition Waste Management Plan



Obbligatorio

Requisiti Develop and implement a construction and demolition waste management plan:

- Establish waste diversion goals for the project by identifying at least five materials (both structural and nonstructural) targeted for diversion. Approximate a percentage of the overall project waste that these materials represent.
- Specify whether materials will be separated or commingled and describe the diversion strategies planned for the project. Describe where the material will be taken and how the recycling facility will process the material.

Provide a final report detailing all major waste streams generated, including disposal and diversion rates. Alternative daily cover (ADC) does not qualify as material diverted from disposal. Land-clearing debris is not considered construction, demolition, or renovation waste that can contribute to waste diversion..

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prerequisito		

Analisi ottenimento del credito

Sarà necessario che siano condotte le seguenti azioni:

- Sviluppare e implementare il Piano di gestione dei rifiuti da costruzione e demolizione (C&DWM Plan);
- Identificare almeno 5 materiali (sia strutturali che non strutturali) destinati alla diversione. Approssimare la percentuale dei rifiuti complessivi del progetto che questi materiali rappresentano;
- Specificare se i materiali saranno separati o mescolati e descrivere le strategie di diversione previste per il progetto, specificando dove il materiale sarà portato e come l'impianto di riciclaggio tratterà il materiale;
- Definire che i rifiuti debbano essere identificati in modo univoco dal codice C.E.R.;
- Identificare sul sito e in planimetria, il luogo per il posizionamento degli appositi cassoni/contenitori coperti per lo stoccaggio del materiale che sarà inviato in centri di recupero e riciclo;
- Non devono essere considerate le terre di scavo;
- Imporre ai sub-appaltatori e ai fornitori il rispetto del Piano di gestione dei rifiuti da costruzione e di registrare la produzione di rifiuti e il relativo smaltimento.
- Formare ed informare in relazione al Piano di gestione dei rifiuti da costruzione i propri addetti e le ditte in sub-appalto e i fornitori, dandone evidenza in appositi report di formazione (che riportino data, nome degli addetti formati, firma, ecc.);
- L'Appaltatrice deve stipulare regolare contratto con ditte specializzate nel trasporto e smaltimento in appositi centri di recupero e riciclo del materiale e allegarne copia nel D&CWM Plan.

5.6.3 MR – Credito: Building Life Cycle Impact Reduction



Punteggio: 1-5 punti



Requisiti Demonstrate reduced environmental effects during initial project decision-making by reusing existing building resources or demonstrating a reduction in materials use through life-cycle assessment.).

OPZIONE 4 (1-4 punti)

For new construction (buildings or portions of buildings), conduct a cradle-to-grave life-cycle assessment of the project's structure and enclosure and select one or more of the following paths below to earn up to 4 points:

Path 1: Conduct a life cycle assessment of the project's structure and enclosure (1 point).

Path 2: Conduct a life cycle assessment of the project's structure and enclosure that demonstrates a minimum of 5% reduction, compared with a baseline building in at least three of the six impact categories listed below, one of which must be global warming potential (2 points).

Path 3: Conduct a life cycle assessment of the project's structure and enclosure that demonstrates a minimum of 10% reduction, compared with a baseline building, in at least three of the six impact categories listed below, one of which must be global warming potential (3 points).

Path 4: Meet requirements of Path 3 and incorporate reuse and/or salvage materials into the project's structure and enclosure for the proposed design. Demonstrate reductions compared with a baseline building of at least 20% reduction for global warming potential and demonstrate at least 10% reduction in two additional impact categories listed below (4 points).

For Paths 2, 3 and 4 listed above, no impact category assessed as part of the life-cycle assessment may increase by more than 5% compared with the baseline building. Include a narrative of how the life cycle assessment was conducted and if applicable for paths 2, 3 and 4 what changes were made to proposed buildings in order to achieve the related impact reductions.

The baseline and proposed buildings must be of comparable size, function, orientation, and operating energy performance as defined in EA Prerequisite Minimum Energy Performance. The service life of the baseline and proposed buildings must be the same and at least 60 years to fully account for maintenance and replacement. Baseline assumptions must be based on standard design and material selection for the project location and building type. Use the same life-cycle assessment

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software tools and data sets to evaluate both the baseline building and the proposed building, and report all listed impact categories. Data sets must be compliant with ISO 14044.

Select at least three of the following impact categories for reduction:

- global warming potential (greenhouse gases), in kg CO₂e;
- depletion of the stratospheric ozone layer, in kg CFC-11e;
- acidification of land and water sources, in moles H⁺ or kg SO₂e;
- eutrophication, in kg nitrogen eq or kg phosphate eq;
- formation of tropospheric ozone, in kg NO_x, kg O₃ eq, or kg ethene; and
- depletion of nonrenewable energy resources, in MJ

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4 punti		1 punt

Analisi ottenimento del credito

Nelle fasi successive del progetto verrà condotta un'analisi LCA (Life Cycle Assessment) dell'edificio che dimostrerà il raggiungimento dei target richiesti per l'ottenimento del punteggio massimo.

5.6.4 MR – Credito: BPDO EPD



Punteggio: 1-2 punti

**Requisiti OPZIONE 1 (1 punto)**

Use at least 20 different permanently installed products sourced from at least five different manufacturers that meet one of the disclosure criteria below:

- Life-cycle assessment and environmental product declarations.
 - Products with a publicly available, critically reviewed life-cycle assessment conforming to ISO 14044 that have at least a cradle to gate scope are valued as one whole product for the purposes of credit achievement calculation.
 - Product-specific Type III EPD -- Internally Reviewed. Products with an internally critically reviewed LCA in accordance with ISO 14071. Products with product-specific internal EPDs which conform to ISO 14025, and EN 15804 or ISO 21930 and have at least a cradle to gate scope are valued as one whole product for the purposes of credit achievement calculation.
 - Industry-wide Type III EPD -- Products with third-party certification (Type III), including external verification, in which the manufacturer is explicitly recognized as a participant by the program operator. Products with industry-wide EPDs, which conform to ISO 14025, and EN 15804 or ISO 21930 and have at least a cradle to gate scope are valued as one whole product for the purposes of credit achievement calculation.
- Environmental Product Declarations which conform to ISO 14025 and EN 15804 or ISO 21930 and have at least a cradle to gate scope.
 - Product-specific Type III EPD -- Products with third-party certification (Type III), including external verification and external critical review are valued as 1.5 products for the purposes of credit achievement calculation

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1 punto	1 punto	

Analisi ottenimento del credito

In fase di costruzione saranno utilizzati almeno 20 differenti prodotti da costruzione installati permanentemente, forniti da almeno 5 differenti produttori dotati di certificazione EPD. Per questo Credito verranno usate le indicazioni del protocollo LEED v4.1 che agevolano l'ottenimento del credito.

5.6.5 MR – Credito: BPDO Sourcing of Raw Materials



Punteggio: 1-2 punti



Requisiti OPZIONE 1 (1-2 punti)

Use products sourced from at least three different manufacturers that meet at least one of the responsible sourcing and extraction criteria below for at least 15%, by cost, of the total value of permanently installed building products in the project (1 point).

Use products sourced from at least five different manufacturers that meet at least one of the responsible sourcing and extraction criteria below for at least 30%, by cost, of the total value of permanently installed building products in the project (2 points)

- Bio-based products that meet the criteria above: value at 50% of cost multiplied by the biobased content of the product for the purposes of credit achievement calculation.
- Wood products. Wood products must be certified by the Forest Stewardship Council or USGBC-approved equivalent. Products meeting wood products criteria are valued at 100% of their cost for the purposes of credit achievement calculation.
- Materials reuse. Reuse includes salvaged, refurbished, or reused products. Products meeting materials reuse criteria are valued at 200% of their cost for the purposes of credit achievement calculation.
- Recycled content. Products meeting recycled content criteria are valued at 100% of their cost for the purposes of credit achievement calculation
 - Recycled content is the sum of postconsumer recycled content plus one-half the pre-consumer recycled content, based on weight.
 - The recycled fraction of the assembly is then multiplied by the cost of assembly to determine the recycled content value.

For credit achievement calculation, products sourced (extracted, manufactured and purchased) within 100 miles (160 km) of the project site are valued at twice their base contributing cost, up to a maximum of 200% of cost.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1 punto	1 punto	

Analisi ottenimento del credito

In fase di costruzione usare prodotti che soddisfino almeno uno dei criteri di estrazione responsabile per almeno il 15% in costo del valore totale dei prodotti nel progetto installati permanentemente nell'edificio. Nel caso si raggiungesse il 30% si otterrebbero due punti. Per questo credito si utilizza la versione LEED v4.1. I criteri di estrazione responsabile sono i seguenti:

- Extended producer responsibility – prodotti acquistati da fornitori che partecipano in un programma di responsabilità estesa del produttore o ne sono direttamente responsabili.
- Bio-based Materials – prodotti a base biologica che rispettano Sustainable Agriculture Network's Sustainable Agriculture Standard e le cui materie prime sono testate usando ASTM Test Method D6866

- Prodotti in legno certificati FSC/PEFC
- Materiali di recupero
- Contenuto di riciclato. Materiali con contenuto di riciclato pre-consumo e/o post-consumo
- USGBC approved program - Prodotti che sono conformi ad altri standard ambientali riconosciuti dal USGBC.

5.6.6 MR – Credito: BPDO Material Ingredients



Punteggio: 1-2 punti



Requisiti OPZIONE 2 (1 punto)

Use products that have a compliant material ingredient report or action plan. Use at least 5 permanently installed products sourced from at least three different manufacturers. Products are valued according to the table below

Report Type & Criteria	Product Documentation	Report Verification	Valuation
Material Ingredient Screening and Optimization Action Plan	Action Plan based on publicly available material inventory to at least 1,000ppm.	Prepared by the manufacturer and signed by company executive	½ product
Advanced Inventory & Assessment: Inventory to at least 0.01% by weight (100 ppm) and no GreenScreen LT-1 hazards or GHS Category 1 hazards are present. Or Inventory to at least 0.01% by weight (100ppm) and at least 75% by weight of product is assessed using GreenScreen. The remaining 25% by weight of product has been inventoried and the GreenScreen assessment is publicly available.	Cradle to Cradle Certified or Material Health Certificate at Bronze level or higher. Declare labels designated as Red List Free or LBC Red List Free. Green Seal. Products certified under the Standard for Paints, Coatings, Stains and Sealers (GS-11, Edition 4.0) that do not include GHS Reproductive toxins (categories 1 and 2). Health Product Declaration that meet optimization and verification criteria. Living Product Challenge certified products that include a Red List Free or LBC Red List Free Declare label. Manufacturer Inventory that meet optimization and verification criteria.	Third-party verified	1 product
Material Ingredient Optimization: Inventory to at least 0.01% by weight (100 ppm) and at least 95% by weight of product is assessed using GreenScreen. No BM-1 hazards are present. The remaining 5% not assessed has been inventoried and screened using GreenScreen List Translator and no GreenScreen LT-1 hazards are present.	Cradle to Cradle Certified or Material Health Certificate at Silver level or higher. Health Product Declaration that meet optimization and verification criteria. Living Product Challenge certified products that achieve Imperative 09: Transparent Material Health. Manufacturer Inventory that meet optimization and verification criteria.		1.5 products
International Alternative Compliance Path: Available to projects located outside of the US	REACH Optimization: Material Inventory to 100ppm with no substances found on the Authorization List – Annex XIV, the Restriction list – Annex XVII and the SVHC candidate list. Global Green TAG PHD report.	REACH report prepared by the manufacturer PHD Report verified by Global Green TAG	1 product


Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1 punto	1 punto	


Analisi ottenimento del credito

Dare indicazione di utilizzare 5 prodotti da 3 produttori differenti che documentino l'ottimizzazione dei componenti (es. prodotti etichettati Cradle to Cradle, prodotti in possesso del report REACH).

5.6.7 MR – Credito: Construction and Demolition Waste Management



Punteggio: 1-2 punti



Requisiti OPZIONE 1 (1-2 punti)

Path 2 (2 punti)

Divert at least 75% of the total construction and demolition material; diverted materials must include at least four material streams

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 punti		

Analisi ottenimento del credito

In fase di cantierizzazione saranno date indicazioni per l'applicazione del Piano di Costruzione e Demolizione definito nel Prerequisito. Con tali linee guida sarà possibile deviare dal flusso della discarica almeno il 75% in peso del totale dei rifiuti prodotti per almeno 4 o più tipologie di rifiuti prodotti. In tal modo si otterranno i 2 punti previsti dal credito.

5.7 Indoor Environmental Quality

5.7.1 IEQ – Prerequisito: Minimum Air Quality Performance



Obbligatorio

Requisiti Mechanically ventilated

For variable air volume systems, provide a direct outdoor airflow measurement device capable of measuring the minimum outdoor air intake flow. This device must measure the minimum outdoor air intake flow with an accuracy of $\pm 10\%$ of the design minimum outdoor airflow rate, as defined by the ventilation requirements above. An alarm must indicate when the outdoor airflow value varies by 15% or more from the outdoor airflow setpoint.

For constant-volume systems, balance outdoor airflow to the design minimum outdoor airflow rate defined by ASHRAE Standard 62.1–2010 (with errata), or higher. Install a current transducer on the supply fan, an airflow switch, or similar monitoring device..

Monitoring

For mechanically ventilated spaces (and for mixed-mode systems when the mechanical ventilation is activated), provide a direct outdoor airflow measurement device capable of measuring the minimum outdoor air intake flow. This device must measure the minimum outdoor air intake flow with an accuracy of $\pm 10\%$ of the design minimum outdoor airflow rate defined by the ventilation requirements above. An alarm must alert staff whenever the outdoor airflow value varies by 15% or more from the outdoor airflow setpoint.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prerequisito		

Analisi ottenimento del credito

Il progetto prevede il rispetto della UNI 10339 e/o della ASHRAE 170-2008, per cui risulta essere allineato alle richieste del protocollo LEED.

In particolare, il sistema di monitoraggio dovrà monitorare la presa dell'aria esterna come riportato di seguito:

- Per sistemi VAV prevedere un sistema di monitoraggio dell'aria esterna capace di monitorare la portata di aria minima. Il sistema di monitoraggio deve come minimo misurare la portata di aria minima con un'accuratezza di $\pm 10\%$ della portata minima di progetto. Un messaggio di allarme deve indicare quando la portata di aria esterna si discosta del 15% o più rispetto al set-point.

5.7.2 IEQ – Prerequisito: Environmental Tobacco Smoke Control



Obbligatorio

Requisiti Prohibit smoking inside the building.

Prohibit smoking outside the building except in designated smoking areas located at least 25 feet (7.5 meters) from all entries, outdoor air intakes, and operable windows. Also prohibit smoking outside the property line in spaces used for business purposes. If the requirement to prohibit smoking within 25 feet (7.5 meters) cannot be implemented because of code, provide documentation of these regulations. Signage must be posted within 10 feet (3 meters) of all building entrances indicating the no-smoking policy.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Prerequisito		

Analisi ottenimento del credito

All'interno del progetto verrà imposto il divieto di fumo all'esterno dell'edificio ad eccezione delle aree fumatori designate, posizionate ad almeno 7,5 metri da tutti gli ingressi, prese di aria esterna e serramenti apribili.

5.7.3 IEQ – Credito: Enhanced Indoor Air Quality Strategies



Punteggio: 1-2 punti

**Requisiti OPZIONE 1 (1 punto)**

Comply with the following requirements, as applicable:

Spazi ventilati meccanicamente:

- A. Entryway systems and provide pressurized entryway vestibules at high-volume building entrances;
- B. Interior cross-contamination prevention; and
- C. Filtration

E/O**OPZIONE 2 (1 punto)**

Comply with the following requirements, as applicable.

Mechanically ventilated spaces (select one):

- A. Exterior contamination prevention;
- B. Increased ventilation;
- C. Carbon dioxide monitoring; or
- D. additional source control and monitoring.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 punti		

Analisi ottenimento del credito

Ai fini di perseguire il credito saranno implementate le seguenti azioni per ottenere due punti:

- Dotazione di filtri F7 o superiori per tutte le UTA.
- Installazione sistemi di ingresso per catturare lo sporco (es. griglie o zerbini) lunghi almeno 3 metri nella direzione principale di marcia in tutti gli ingressi principali dell'edificio
- Installazione sistemi per la prevenzione della contaminazione incrociata dell'aria; devono essere chiaramente individuate tutte le zone in cui si prevede la produzione di inquinanti (es. locali deposito prodotti chimici, laboratori, parcheggi ecc.). Per questi tipi di locali prevedere un sistema dedicato di estrazione dell'aria. La portata di estrazione deve essere coerente con quella definita nello standard ASHRAE 62.1:2010 e comunque non inferiore a 2,54 l/s m2. Prevedere un sistema di partizioni continuo pavimento soffitto e prevedere porte dotate di congegni di chiusura automatica.

- Sensori per la CO₂, negli spazi densamente occupati, ubicati a un'altezza dal pavimento compresa tra 90 e 180 cm. Tali sensori devono essere dotati di allarmi sonori o di indicatori visivi o di segnali di allarme collegati al sistema di controllo dell'edificio, al fine di segnalare incrementi superiori al 10% della concentrazione di CO₂ rispetto al valore di setpoint.

5.7.4 IEQ – Credito: Low Emitting Materials



Punteggio: 1-3 punti



Requisiti This credit includes requirements for product manufacturing as well as project teams. It covers volatile organic compound (VOC) emissions into indoor air and the VOC content of materials, as well as the testing methods by which indoor VOC emissions are determined. Different materials must meet different requirements to be considered compliant for this credit. The building interior and exterior are organized in seven categories, each with different thresholds of compliance. The building interior is defined as everything within the waterproofing membrane. The building exterior is defined as everything outside and inclusive of the primary and secondary weatherproofing system, such as waterproofing membranes and air- and water-resistive barrier materials.

Achieve the threshold level of compliance with emissions and content standards for the number of product categories listed in Table 1.

Category	Threshold	Emissions and content requirements
Interior paints and coatings applied on site	At least 90%, by volume, for emissions; 100% for VOC content	<ul style="list-style-type: none"> General Emissions Evaluation for paints and coatings applied to walls, floors, and ceilings VOC content requirements for wet applied products
Interior adhesives and sealants applied on site (including flooring adhesive)	At least 90%, by volume, for emissions; 100% for VOC content	<ul style="list-style-type: none"> General Emissions Evaluation VOC content requirements for wet applied products
Flooring	100%	General Emissions Evaluation
Composite wood	100% not covered by other categories	Composite Wood Evaluation
Ceilings, walls, thermal, and acoustic insulation	100%	<ul style="list-style-type: none"> General Emissions Evaluation Healthcare, Schools only Additional insulation requirements
Furniture (include in calculations if part of scope of work)	At least 90%, by cost	Furniture Evaluation

Table 1. Points for low-emitting materials	
2 product categories	1 point
3 product categories	2 points
3 product categories at 90% threshold	3 points
4 product categories	3 points
4 product categories with at least 3 product categories at 90% threshold	3 points + exemplary performance
5 product categories	3 points + exemplary performance

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3 punti		

Analisi ottenimento del credito

Il Credito si ritiene verificabile per ottenere i tre punti a disposizione. Verranno date le indicazioni per utilizzare prodotti basso emissivi per almeno 4 categorie di seguito indicate, che siano conformi ai requisiti del Credito:

- Pitture e rivestimenti interni applicati in sito;
- Adesivi e sigillanti applicati in sito;
- Sistema di pavimentazione;
- Legno composito;
- Controsoffitti,
- Muri,
- Isolanti acustici e termici
- Arredo

5.7.5 IEQ – Credito: Construction Indoor Air Quality Management Plan



Punteggio: 1 punto

Requisiti Develop and implement an indoor air quality (IAQ) management plan for the construction and preoccupancy phases of the building. The plan must address all of the following. During construction, meet or exceed all applicable recommended control measures of the Sheet Metal and Air Conditioning National Contractors Association (SMACNA) IAQ Guidelines for Occupied Buildings under Construction, 2nd edition, 2007, ANSI/SMACNA 008–2008, Chapter 3. Protect absorptive materials stored on-site and installed from moisture damage. Do not operate permanently installed air-handling equipment during construction unless filtration media with a minimum efficiency reporting value (MERV) of 8, as determined by ASHRAE 52.2–2007, with errata (or equivalent filtration media class of F5 or higher, as defined by CEN Standard EN 779–2002, Particulate Air Filters for General Ventilation, Determination of the Filtration Performance, [East Asia ACP: Construction IAQ Equivalent]), are installed at each return air grille and return or transfer duct inlet opening such that there is no bypass around the filtration media. Immediately before occupancy, replace all filtration media with the final design filtration media, installed in accordance with the manufacturer's recommendations. Prohibit the use of tobacco products inside the building and within 25 feet (8 meters) of the building entrance during construction.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 punto		

Analisi ottenimento del credito

Le specifiche del credito saranno inserite a capitolato. Il General Contractor si farà carico, attraverso il proprio LEED AP, di redigere, attuare e monitorare un piano IAQ che rispetti i requisiti del credito.

5.7.6 IEQ – Credito: Indoor Air Quality Assessment



Punteggio: 1-2 punti

Requisiti

Select one of the following two options, to be implemented after construction ends and the building has been completely cleaned. All interior finishes, such as millwork, doors, paint, carpet, acoustic tiles, and movable furnishings (e.g., workstations, partitions), must be installed, and major VOC punch list items must be finished.

OPZIONE 1 FLUSH-OUT (1 punto)

Path 1 – Before Occupancy

Install new filtration media and perform a building flush-out by supplying a total air volume of 14,000 cubic feet of outdoor air per square foot (4 267 140 liters per second of outdoor air per square meter) of gross floor area while maintaining an internal temperature of at least 60°F (15°C) and no higher than 80°F (27°C) and relative humidity no higher than 60%.

O

Path 2 – During Occupancy: If occupancy is desired before the flush-out is completed, the space may be occupied only after delivery of a minimum of 3,500 cubic feet of outdoor air per square foot (1 066 260 liters per second of outdoor air per square meter) of gross floor area while maintaining an internal temperature of at least 60°F (15°C) and no higher than 80°F (27°C) and relative humidity no higher than 60%

Once the space is occupied, it must be ventilated at a minimum rate of 0.30 cubic foot per minute (cfm) per square foot of outdoor air (1.5 liters of outside air per second per square meter) or the design minimum outdoor air rate determined in EQ Prerequisite Minimum Indoor Air Quality Performance, whichever is greater. During each day of the flush-out period, ventilation must begin at least three hours before occupancy and continue during occupancy. These conditions must be maintained until a total of 14,000 cubic feet per square foot of outdoor air (4 270 cubic meters of outdoor air per square meter) has been delivered to the space.

OPZIONE 2 AIR TESTING (1-2 punti)

After construction ends and before occupancy, but under ventilation conditions typical for occupancy, conduct baseline IAQ testing in occupied spaces for the contaminants listed in Path 1. Particulate matter and inorganic gases (for 1 point) and/or Path 2. Volatile organic compounds (for 1 point). Retail projects may conduct the testing within 14 days of occupancy.

Path 1 – Particulate Matter and Inorganic Gases (1 point): Test for the particulate matter (PM) and inorganic gases listed in Table 1, using an allowed test method, and demonstrate the contaminants do not exceed the concentration limits listed in the table.

Table 1. Particulate Matter and inorganic gases

Contaminant (CAS#)	Concentration Limit ($\mu\text{g}/\text{m}^3$)	Allowed Test Methods
Carbon monoxide (CO)	9 ppm; no more than 2 ppm above outdoor levels	ISO 4224 EPA Compendium Method IP-3 GB/T 18883-2002 for projects in China Direct calibrated electrochemical instrument with accuracy of +/- 3% of reading and resolution of 0.1 ppm NDIR CO Sensors with accuracy of 1% of 10 ppm full scale and display resolution of less than 0.1ppm
PM 10	ISO 14644-1:2015, cleanroom class of 8 or lower 50 $\mu\text{g}/\text{m}^3$ Healthcare only: 20 $\mu\text{g}/\text{m}^3$	Particulate monitoring device with accuracy greater of 5 micrograms/ m^3 or 20% of reading and resolution (5 min average data) +/- 5 $\mu\text{g}/\text{m}^3$
PM 2.5	12 $\mu\text{g}/\text{m}^3$ or 35 $\mu\text{g}/\text{m}^3$ **	
Ozone	0.07 ppm	Monitoring device with accuracy greater of 5 ppb or 20% of reading and resolution (5 min average data) +/- 5 ppb ISO 13964 ASTM D5149 -- O2 EPA designated methods for Ozone

**Projects in areas with high ambient levels of PM2.5 (known EPA nonattainment areas for PM2.5, or local equivalent) must meet the 35 $\mu\text{g}/\text{m}^3$ limit, all other projects should meet the 12 $\mu\text{g}/\text{m}^3$ limit.

E/O

Path 2 – Volatile Organic Compounds (1 punto): Perform a screening test for Total Volatile Organic Compounds (TVOC). Use ISO 16000-6, EPA TO-17, or EPA TO-15 to collect and analyze the air sample. Calculate the TVOC value per EN 16516:2017, CDPH Standard Method v1.2 2017 section 3.9.4, or alternative calculation method as long as full method description is included in test report. If the TVOC levels exceed 500 $\mu\text{g}/\text{m}^3$, investigate for potential issues by comparing the individual VOC levels from the GC/MS results to associated cognizant authority health-based limits. Correct any identified issues and re-test if necessary.

Additionally, test for the individual volatile organic compounds listed in Table 2 using an allowed test method and demonstrate the contaminants do not exceed the concentration limits listed in the table. Laboratories that conduct the tests must be accredited under ISO/IEC 17025 for the test methods they use.

Exemplary performance is available for projects that test for the additional target volatile organic compounds specified in CDPH Standard Method v1.2-2017, Table 4-1 and do not exceed the full CREL levels for these compounds adopted by Cal/EPA OEHHA in effect on June 2016.

Contaminant (CAS#)	Concentration Limit ($\mu\text{g}/\text{m}^3$)	Allowed Test Methods
Formaldehyde 50-00-0	20 $\mu\text{g}/\text{m}^3$ (16 ppb)	ISO 16000-3, 4; EPA TO-11a, EPA comp. IP-6A ASTM D5197-16
Acetaldehyde 75-07-0	140 $\mu\text{g}/\text{m}^3$	
Benzene 71-43-2	3 $\mu\text{g}/\text{m}^3$	ISO 16000-6 EPA IP-1, EPA TO-17, EPA TO-15 ISO 16017-1, 2; ASTM D6196-15
Hexane (n-) 110-54-3	7000 $\mu\text{g}/\text{m}^3$	
Naphthalene 91-20-3	9 $\mu\text{g}/\text{m}^3$	
Phenol 108-95-2	200 $\mu\text{g}/\text{m}^3$	
Styrene 100-42-5	900 $\mu\text{g}/\text{m}^3$	
Tetrachloroethylene 127-18-4	35 $\mu\text{g}/\text{m}^3$	
Toluene 108-88-3	300 $\mu\text{g}/\text{m}^3$	
Vinyl acetate 108-05-4	200 $\mu\text{g}/\text{m}^3$	
Dichlorobenzene (1,4-) 106-46-7	800 $\mu\text{g}/\text{m}^3$	
Xylenes-total 108-38-3, 95-47-6, and 106-42-3	700 $\mu\text{g}/\text{m}^3$	

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2 punti		

Analisi ottenimento del credito

Il progetto prevede che a fine lavori siano condotti i test sulla qualità dell'aria negli ambienti interni per valutare i livelli di concentrazione di Particolato e Gas inorganici e sui VOC.

5.7.7 IEQ – Credito: Thermal Comfort



Punteggio: 1 punto

Requisiti

OPTION 1. ASHRAE Standard 55-2010.

Design heating, ventilating, and air-conditioning (HVAC) systems and the building envelope to meet the requirements of ASHRAE Standard 55–2010, Thermal Comfort Conditions for Human Occupancy, with errata or a local equivalent. For natatoriums, demonstrate compliance with ASHRAE HVAC Applications Handbook, 2011 edition, Chapter 5, Places of Assembly, Typical Natatorium Design Conditions, with errata.



OPTION 2. ISO and CEN Standards.

Design HVAC systems and the building envelope to meet the requirements of the applicable standard:

- ISO 7730:2005, Ergonomics of the Thermal Environment, analytical determination and interpretation of thermal comfort, using calculation of the PMV and PPD indices and local thermal comfort criteria; and
- CEN Standard EN 15251:2007, Indoor Environmental Input Parameters for Design and Assessment of Energy Performance of Buildings, addressing indoor air quality, thermal environment, lighting, and acoustics, Section A2.

Meet the above requirements for office portions of the building. In regularly occupied areas of the building's bulk storage, sorting, and distribution areas, include one or more of the following design alternatives:

- radiant flooring;
- circulating fans;
- passive systems, such as nighttime air, heat venting, or wind flow;
- localized active cooling (refrigerant or evaporative-based systems) or heating systems; and
- localized, hard-wired fans that provide air movement for occupants' comfort.

Provide a narrative describing any thermal comfort strategies not listed above.

THERMAL COMFORT CONTROL

Provide individual thermal comfort controls for every patient room and at least 50% of the remaining individual occupant spaces. Provide group thermal comfort controls for all shared multioccupant spaces. Thermal comfort controls allow occupants, whether in individual spaces or shared multioccupant spaces, to

adjust at least one of the following in their local environment: air temperature, radiant temperature, air speed, and humidity.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 punto		

Analisi ottenimento del credito

Il progetto prevede di includere nella propria progettazione i parametri richiesti dalle norme UNI EN ISO 7730:2005 e CEN EN 15251:2007. Saranno inoltre sviluppate soluzioni progettuali a garantire il miglior comfort possibile negli spazi destinati alle attività di magazzino. Inoltre, si prevede l'installazione di sistemi di controllo del comfort termico sia per almeno il 50% degli spazi occupati individualmente (parte uffici) e sia per tutti gli ambienti condivisi da più occupanti (magazzino e sale conferenze).

5.7.8 IEQ – Credito: Interior Lighting



Punteggio: 1-2 punti

Requisito Meet 1 strategy for 1 point. Meet 3 strategies total for 2 points.

1. Glare Control - for all regularly occupied spaces, meet one:

- -Use light fixtures with a luminance of less than 7,000 candela per square meter (cd/m)² between 45 and 90 degrees from nadir. OR
- -Achieve a Unified Glare Rating (UGR) rating of <19 using software modelling calculations of the designed lighting.

2. Color Rendering - for all regularly occupied spaces meet:

- Use light sources that have a CRI of at least 90.

3. Lighting Control - provide dimmable or multilevel lighting for 90% of occupant spaces.

4. Surface Reflectivity - For at least 90% regularly occupied spaces, use interior finishes with a surface reflectance greater or equal to 80% for ceilings and 55% for walls

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1 punto	1 punto	

Analisi ottenimento del credito

Il progetto prevede di perseguire il credito implementando sicuramente una delle strategie elencate, quale quella di garantire corpi illuminanti dimmerabili e/o multilivello di luminosità in almeno il 90% degli spazi occupati. Nelle fasi progettuali seguenti si verificherà se implementare altre strategie per ottenere il secondo punto.

5.7.9 IEQ – Credito: Daylight



Punteggio: 1-3 punti



Requisiti Provide manual or automatic (with manual override) glare-control devices for all regularly occupied spaces. For core and shell projects, glare-control devices are not required in the spaces to be fit-out by the tenant(s).

E

OPZIONE 2. Simulation: Illuminance calculations. (1-2 punti)

Perform computer simulations for illuminance at 9 a.m. and 3 p.m. on a clear-sky day at the equinox for each regularly occupied space. Healthcare projects should use the regularly occupied spaces located in the perimeter area determined under EQ Credit Quality Views.

Demonstrate illuminance levels are between 300 lux and 3,000 lux at both 9 a.m. and 3 p.m. Spaces with view-preserving automatic (with manual override) glare-control devices may demonstrate compliance for only the minimum 300 lux illuminance level.

Table 2. Points for Option 2

<i>New Construction, Core and Shell, Schools, Retail, Data Centers, Warehouses and Distribution Centers, Hospitality</i>		<i>Healthcare</i>	
<i>Percentage of regularly occupied floor area</i>	<i>Points</i>	<i>Percentage of regularly occupied floor area within perimeter area</i>	<i>Points</i>
55%	1	55%	1
75%	2	75%	2
90%	3	90%	Exemplary performance

Calculate illuminance intensity for sun (direct component) and sky (diffuse component) for clear-sky conditions as follows:

- Use typical meteorological year data, or an equivalent, for the nearest available weather station.
- Select one day within 15 days of September 21 and one day within 15 days of March 21 that represent the clearest sky condition.
- Use the average of the hourly value for the two selected days.

Exclude blinds or shades from the model. Include any permanent interior obstructions. Moveable furniture and partitions may be excluded.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		3 punti

Analisi ottenimento del credito

Data la conformazione dell'area destinata a magazzino si ritiene non perseguibile il credito e l'ottenimento dei tre punti disponibili.

5.7.10 IEQ – Credito: Quality Views



Punteggio: 1 punto



Requisiti Achieve a direct line of sight to the outdoors via vision glazing for 75% of all regularly occupied floor area.

View glazing in the contributing area must provide a clear image of the exterior, not obstructed by frits, fibers,

patterned glazing, or added tints that distort color balance.

Additionally, 75% of all regularly occupied floor area must have at least two of the following four kinds of views:

- multiple lines of sight to vision glazing in different directions at least 90 degrees apart;
- views that include at least two of the following: (1) flora, fauna, or sky; (2) movement; and (3) objects at least 25 feet (7.5 meters) from the exterior of the glazing;
- unobstructed views located within the distance of three times the head height of the vision glazing; and
- views with a view factor of 3 or greater, as defined in “Windows and Offices; A Study of Office Worker Performance and the Indoor Environment.”

Include in the calculations any permanent interior obstructions. Movable furniture and partitions may be excluded.

Views into interior atria may be used to meet up to 30% of the required area.

For the office portion of the building, meet the requirements above.

For the bulk storage, sorting, and distribution portions of the building, meet the requirements above for 25% of the regularly occupied floor area

Previsione ottenimento e punteggio

SI	FORSE	NO
<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
		1 punto

Analisi ottenimento del credito

Data la conformazione dell'area destinata a magazzino si ritiene non perseguibile il credito e l'ottenimento del punto disponibile.

5.7.11 IEQ – Credito: Acoustic Performance



Punteggio: 1 punto



Requisiti For all occupied spaces, meet two of the following: HVAC background noise, Sound Transmission, and/or Reverberation time. Meet all three for an exemplary performance point.

Confirm compliance via calculations or measurements in representative rooms, and/or design documentation from a person experienced in the field of acoustics.

HVAC Background Noise

Achieve maximum background noise levels from heating, ventilating, and air conditioning (HVAC) systems per 2015 ASHRAE Handbook-- HVAC Applications, Chapter 48, Table 1 ; AHRI Standard 885-2008, Table 15; or a local equivalent.

If confirming compliance via measurements, use a sound level meter that conforms to ANSI S1.4 for type 1 (precision) or type 2 (general purpose) sound measurement instrumentation, the International Electro-technical Commission (2013) IEC 61672-1:2013 Electroacoustics – Sound Level Meters – Part 1: Specifications, or a local equivalent.

Comply with design criteria for HVAC noise levels resulting from the sound transmission paths listed in 2015 ASHRAE Handbook—HVAC Applications, Chapter 48, Table 6; or a local equivalent).

Sound Transmission

Categorize all occupied spaces by use and desired level of acoustic privacy. Meet the composite sound transmission class (STCC) ratings or noise isolation class (NIC) listed in Table 1. For NIC measurements, use ASTM E336-17a or Annex A.3 of ANSI S12.60-2010.

Table 1. Minimum composite sound transmission class ratings or noise isolation class for adjacent spaces

Adjacency combinations		STC _c **	NIC**
Retail	Retail	50	45
Collaborative / multi-use	Hallway, stairway	25	20
Private	Hallway, stairway	35	30
Confidential	Hallway, stairway	40	35
Collaborative / multi-use	Collaborative / multi-use	35	30
Collaborative / multi-use	Private	45	40
Collaborative / multi-use	Confidential	50	45
Private	Private	45	40
Private	Confidential	50	45
Confidential	Confidential	50	45
Conference room	Conference room	50	45
Mechanical equipment room*	Hallway, stairway	50	45
Mechanical equipment room*	Occupied area	60	55

*Minimum STC_c or NIC has to be met unless proven that the equipment noise in conjunction with the sound isolation performance of the partitions and doors will not exceed the maximum background noise requirements of the adjacent space.

Reverberation Time

Meet the reverberation time requirements in Table 2 (adapted from Table 9.1 in the Performance Measurement Protocols for Commercial Buildings).

Table 2. Reverberation time requirements

Room type	Application	T60 (sec), at 500 Hz, 1000 Hz, and 2000 Hz
Hotel/motel	Individual room or suite	< 0.6
	Meeting or banquet room	< 0.8
Office building	Executive or private office	< 0.6
	Conference room	< 0.6
	Teleconference room	< 0.6
	Open-plan office without sound masking	< 0.8
	Open-plan office with sound masking	0.8
Courtroom	Unamplified speech	< 0.7
	Amplified speech	< 1.0
Performing arts space	Drama theaters, concert and recital halls	Varies by application
Laboratories	Testing or research with minimal speech communication	< 1.0
	Extensive phone use and speech communication	< 0.6
Church, mosque, synagogue	General assembly with critical music program	Varies by application
Library		< 1.0
Indoor stadium, gymnasium	Gymnasium and natatorium	< 2.0
	Large-capacity space with speech amplification	< 1.5

Previsione ottenimento e punteggio

SI	FORSE	NO
<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
	1 punto	

Analisi ottenimento del credito

La progettazione acustica verrà approfondita nelle fasi successive di progettazione e verrà valutato la possibilità o meno di intraprendere le richieste del credito LEED.

5.8 Innovation

5.8.1 INN – Credito: Innovation in Design



Punteggio: 1-5 punti

Requisiti Project teams can use any combination of innovation, pilot, and exemplary performance strategies.

OPZIONE 1. Innovation (1 punto)

Achieve significant, measurable environmental performance using a strategy not addressed in the LEED green building rating system. Identify the following: ·

- - the intent of the proposed innovation credit;
- proposed requirements for compliance;
- proposed submittals to demonstrate compliance; and
- the design approach or strategies used to meet the requirements

E/O

OPZIONE 2. Pilot (1 punto)

Achieve one pilot credit from USGBC's LEED Pilot Credit Library

E/O

OPZIONE 3. Additional Strategies

Innovation (1-3 points)

- Defined in Option 1 above.

Pilot (1-3 points)

- Meet the requirements of Option 2.

Exemplary Performance (1-2 points)

- Achieve exemplary performance in an existing LEED v4 prerequisite or credit that allows exemplary performance, as specified in the LEED Reference Guide, v4 edition. An exemplary performance point is typically earned for achieving double the credit requirements or the next incremental percentage threshold.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5 punti		

Analisi ottenimento del credito

I seguenti crediti vengono ipotizzati nella categoria Innovation:

- INNOVATION:
 - **Purchasing Lamps.** È prevista l'installazione di sole lampade LED.
 - **Green Building Education.** Verranno sviluppate strategie di comunicazione e materiali informativi sul progetto in maniera che emergano le sue caratteristiche di edificio green.
 - **Sustainable Wastewater Management:** Il progetto prevede di utilizzare acqua proveniente da fonti non potabili approvate (es. acqua piovana) per il riuso in loco, (ad esempio, irrigazione aree esterne, cassette wc).
- PILOT CREDIT:
 - **Integrative Analysis of Building Materials:** In fase di realizzazione verranno utilizzati almeno tre diversi prodotti installati in modo permanente che dimostrino tramite un'analisi qualitativa documentata (EPD, LCA) i potenziali impatti sulla salute, sulla sicurezza e sull'ambiente del prodotto in cinque fasi del suo ciclo di vita.
- EXEMPLARY PERFORMANCE:
 - **Renewable Energy Production.** Dato l'ampio utilizzo del fotovoltaico il progetto soddisferà una quota di fabbisogno energetico tramite fonti rinnovabili da garantire la prestazione esemplare.

5.8.2 INN – Credito: LEED AP



Punteggio: 1 punto

Requisiti At least one principal participant of the project team must be a LEED Accredited Professional (AP) with a specialty appropriate for the project.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
1 punto		

Analisi ottenimento del credito

LEED AP. Avendo integrato un professionista certificato LEED AP si ottiene il credito.

5.9 Regional Priority

5.9.1 RP – Credito: Regional Priority



Punteggio: 1-4 punti

Requisiti Earn up to four of the six Regional Priority credits. These credits have been identified by the USGBC regional councils and chapters as having additional regional importance for the project's region. A database of Regional Priority credits and their geographic applicability is available on the USGBC website, <http://www.usgbc.org>.

One point is awarded for each Regional Priority credit achieved, up to a maximum of four.

Previsione ottenimento e punteggio

SI	FORSE	NO
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
4 punti		

Analisi ottenimento del credito

I Crediti a priorità regionale definiti per il Comune di Brescello che si ritengono ottenibili sono i seguenti:

- Reduced Parking Footprint
- Light Pollution Reduction
- Green Vehicles
- Outdoor water use reduction

6 LEED PROJECT CHECKLIST – VALUTAZIONE PRELIMINARE DEL PUNTEGGIO

Nella tabella seguente viene riportato il punteggio come descritto nell’analisi del capitolo precedente



LEED v4 for BD+C: Warehouses and Distribution Centers
Project Checklist

Project Name: Nuovo Warehouse e Distribution Center - Brescello

Y	?	N			
1			Credit	Integrative Process	1
7	1	8	Location and Transportation		16
			Credit	LEED for Neighborhood Development Location	16
		1	Credit	Sensitive Land Protection	1
		2	Credit	High Priority Site	2
4		1	Credit	Surrounding Density and Diverse Uses	5
	1	4	Credit	Access to Quality Transit	5
1			Credit	Bicycle Facilities	1
1			Credit	Reduced Parking Footprint	1
1			Credit	Green Vehicles	1
7	0	3	Sustainable Sites		10
Y			Prereq	Construction Activity Pollution Prevention	Required
1			Credit	Site Assessment	1
		2	Credit	Site Development - Protect or Restore Habitat	2
		1	Credit	Open Space	1
3			Credit	Rainwater Management	3
2			Credit	Heat Island Reduction	2
1			Credit	Light Pollution Reduction	1
9	0	2	Water Efficiency		11
Y			Prereq	Outdoor Water Use Reduction	Required
Y			Prereq	Indoor Water Use Reduction	Required
Y			Prereq	Building-Level Water Metering	Required
2			Credit	Outdoor Water Use Reduction	2
6			Credit	Indoor Water Use Reduction	6
		2	Credit	Cooling Tower Water Use	2
1			Credit	Water Metering	1
31	0	2	Energy and Atmosphere		33
Y			Prereq	Fundamental Commissioning and Verification	Required
Y			Prereq	Minimum Energy Performance	Required
Y			Prereq	Building-Level Energy Metering	Required
Y			Prereq	Fundamental Refrigerant Management	Required
6			Credit	Enhanced Commissioning	6
18			Credit	Optimize Energy Performance	18
1			Credit	Advanced Energy Metering	1
		2	Credit	Demand Response	2
3			Credit	Renewable Energy Production	3
1			Credit	Enhanced Refrigerant Management	1
2			Credit	Green Power and Carbon Offsets	2

9	3	1	Materials and Resources			13
Y			Prereq	Storage and Collection of Recyclables	Required	
Y			Prereq	Construction and Demolition Waste Management Planning	Required	
4		1	Credit	Building Life-Cycle Impact Reduction	5	
1	1		Credit	Building Product Disclosure and Optimization - Environmental Product Declarations	2	
1	1		Credit	Building Product Disclosure and Optimization - Sourcing of Raw Materials	2	
1	1		Credit	Building Product Disclosure and Optimization - Material Ingredients	2	
2			Credit	Construction and Demolition Waste Management	2	
10	2	4	Indoor Environmental Quality			16
Y			Prereq	Minimum Indoor Air Quality Performance	Required	
Y			Prereq	Environmental Tobacco Smoke Control	Required	
2			Credit	Enhanced Indoor Air Quality Strategies	2	
3			Credit	Low-Emitting Materials	3	
1			Credit	Construction Indoor Air Quality Management Plan	1	
2			Credit	Indoor Air Quality Assessment	2	
1			Credit	Thermal Comfort	1	
1	1		Credit	Interior Lighting	2	
		3	Credit	Daylight	3	
		1	Credit	Quality Views	1	
	1		Credit	Acoustic Performance	1	
6	0	0	Innovation			6
5			Credit	Innovation	5	
1			Credit	LEED Accredited Professional	1	
4	0	0	Regional Priority			4
1			Credit	Regional Priority: Light Pollution Reduction	1	
1			Credit	Regional Priority: Reduced Parking Footprint	1	
1			Credit	Regional Priority: Green Vehicles	1	
1			Credit	Regional Priority: Outdoor Water Use Reduction	1	
84	6	20	TOTALS			Possible Points: 110

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