# An Introduction to LEED v5 BD+C

Daniel Overbey, AIA, NCARB, LEED Fellow, WELL AP, Fitwel Ambassador, EcoDistricts AP, ActiveScore AP,

LEED AP BD+C, ID+C, O+M

October 3, 2024

2024 REBUILD Conference

browning day

BALL STATE UNIVERSITY

# Continuing Education Learning Objectives

**Requirements**

After attending this session, attendees will be able to:

1. Define the role of third-party verified rating systems, including LEED, in facilitating green building design and construction practices.
2. Describe the overall structure of the LEED v5 BD+C rating system.
3. Identify the three LEED v5 system goals and describe how green budling design and construction can address each goal.
4. Explain how LEED v5 differs from LEED v4/v4.1 with regard to the Building Design and Construction (BD+C): New Construction rating system.

**Continuing Education Session (CES)**

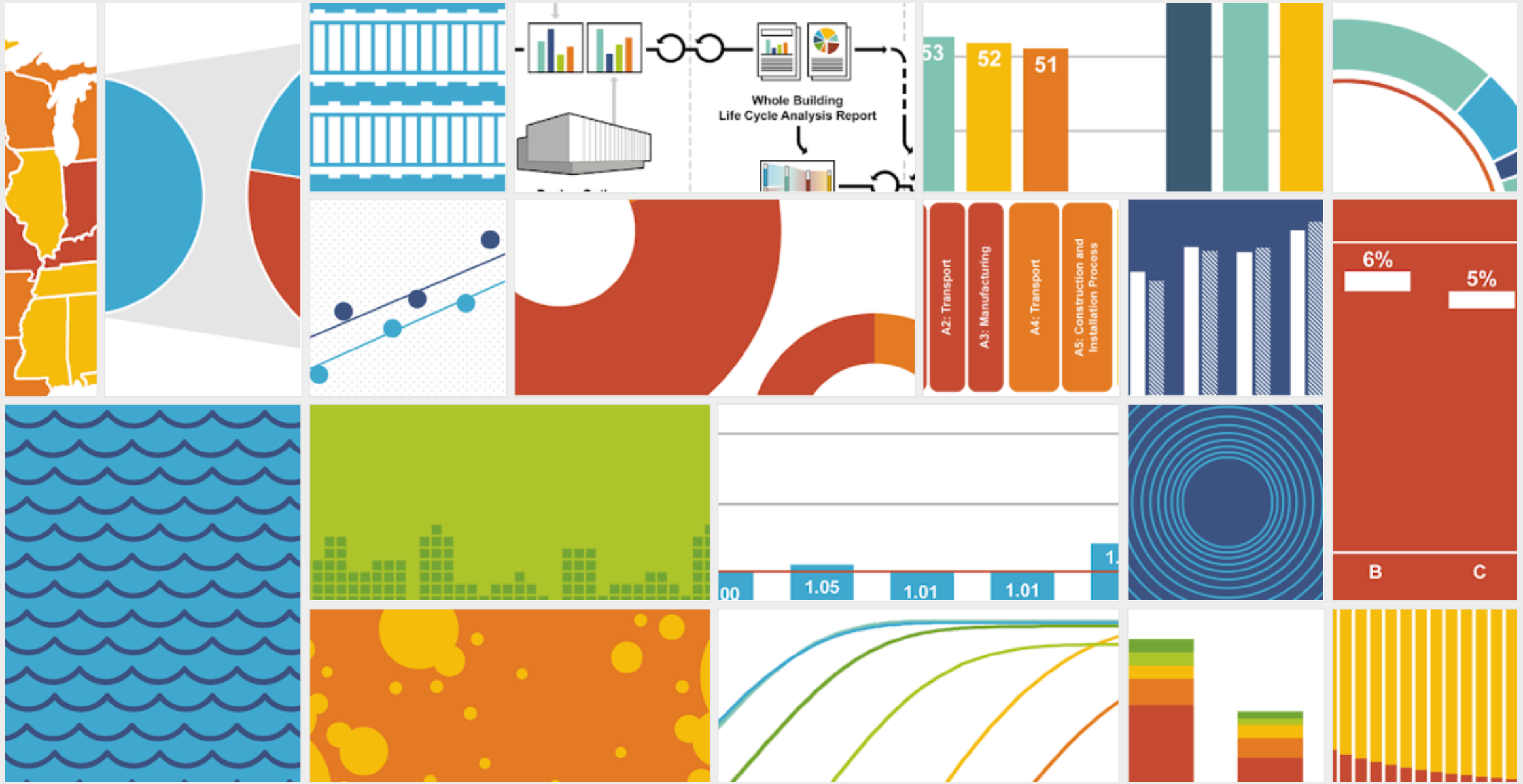
1.0 Learning Units: AIA

Course code: 2024INDJO

AIA Indiana

AIA Continuing Education Provider

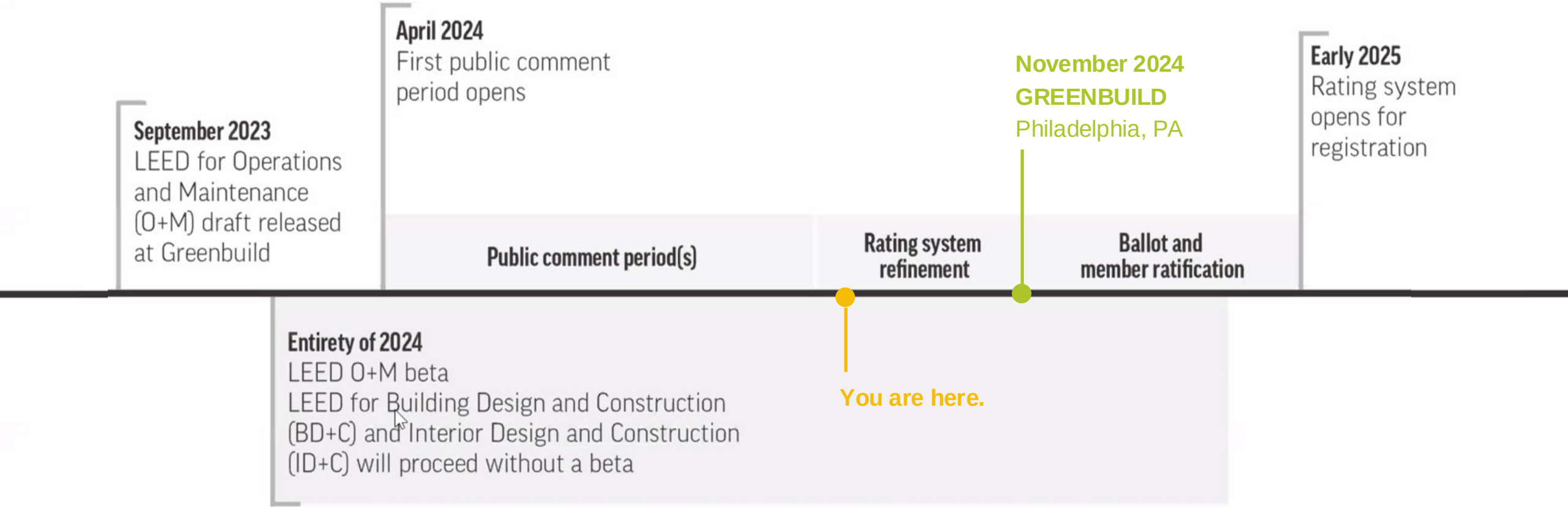
Images courtesy of Browning Day


Whole Building
Life Cycle Analysis Report
53
52
51
A2: Transport
A3: Manufacturing
A4: Transport
A5: Construction and Installation Process
6%
5%
B
C
1.05
1.01
1.01


LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN
LEED


LEED
V5

# LEED v5 Development Timeline



LEED V5

**A market ready rating system that will drive the built environment toward a low carbon future that is equitable, resilient, and promotes the wise, safe utilization of all resources.**


Source: USGBC

# LEED v5 Credit Categories

**Integrative Process, Planning and Assessments (IP)**

**Energy & Atmosphere (EA)**

**Location & Transportation (LT)**

**Materials & Resources (MR)**

**Sustainable Sites (SS)**

**Indoor Environmental Quality (EQ)**

**Water Efficiency (WE)**

**Project Priorities & Innovation (IN)**

# LEED v5 Credit Categories

| | |
|---|---|
| 1 | Integrative Process, Planning and Assessments (IP) |
| 15 | Location & Transportation (LT) |
| 11 | Sustainable Sites (SS) |
| 9 | Water Efficiency (WE) |
| 33 | Energy & Atmosphere (EA) |
| 18 | Materials & Resources (MR) |
| 13 | Indoor Environmental Quality (EQ) |
| 10 | Project Priorities & Innovation (IN) |

# LEED v5 for Design and Construction: New Construction (NC)

| Integrative Process, Planning and Assessments (IP) | | 1 |
|---|---|---|
| Prerequisite 1 | Climate Resilience Assessment | Required |
| Prerequisite 2 | Human Impact Assessment | Required |
| Prerequisite 3 | Carbon Assessment | Required |
| Credit 1 | Integrative Design Process | 1 |

| Location & Transportation (LT) | | 15 |
|---|---|---|
| Credit 1 | Sensitive Land Protection | 1 |
| Credit 2 | Equitable Development | 2 |
| Credit 3 | Compact and Connected Development | 6 |
| Credit 4 | Transportation Demand Management | 4 |
| Credit 5 | Electric Vehicles | 2 |

| Sustainable Sites (SS) | | 11 |
|---|---|---|
| Prerequisite 1 | Minimized Site Disturbance | Required |
| Credit 1 | Biodiverse Habitat | 2 |
| Credit 2 | Accessible Open Space | 1 |
| Credit 3 | Rainwater Management | 3 |
| Credit 4 | Enhanced Resilient Site Design | 2 |
| Credit 5 | Heat Island Reduction | 2 |
| Credit 6 | Light Pollution Reduction | 1 |

| Water Efficiency (WE) | | 9 |
|---|---|---|
| Prerequisite 1 | Water Metering and Reporting | Required |
| Prerequisite 2 | Minimum Water Efficiency | Required |
| Credit 1 | Water Meter and Leak Detection | 1 |
| Credit 2 | Enhanced Water Efficiency | 8 |

| Energy & Atmosphere (EA) | | 33 |
|---|---|---|
| Prerequisite 1 | Operational Carbon Projection and Decarbonization Plan | Required |
| Prerequisite 2 | Minimum Energy Efficiency | Required |
| Prerequisite 3 | Fundamental Commissioning | Required |
| Prerequisite 4 | Energy Metering and Reporting | Required |
| Prerequisite 5 | Fundamental Refrigerant Management | Required |
| Credit 1 | Electrification* | 5 |
| Credit 2 | Reduce Peak Thermal Loads | 5 |
| Credit 3 | Enhanced Energy Efficiency* | 10 |
| Credit 4 | Renewable Energy* | 5 |
| Credit 5 | Enhanced Commissioning | 4 |
| Credit 6 | Grid Interactive | 2 |
| Credit 7 | Enhanced Refrigerant Management | 2 |

| Materials & Resources | | 18 |
|---|---|---|
| Prerequisite 1 | Planning for Zero Waste Operations | Required |
| Prerequisite 2 | Assess and Quantify Embodied Carbon | Required |
| Credit 1 | Building and Materials Reuse | 3 |
| Credit 2 | Reduce Embodied Carbon* | 6 |
| Credit 3 | Low Emitting Materials | 2 |
| Credit 4 | Building Product Disclosure and Optimization | 5 |
| Credit 5 | Construction and Demolition Waste Diversion | 2 |

| Indoor Enviromental Quality (EQ) | | 13 |
|---|---|---|
| Prerequisite 1 | Construction Management Plan | Required |
| Prerequisite 2 | Fundamental Air Quality | Required |
| Prerequisite 3 | No Smoking or Vehicle Idling | Required |
| Credit 1 | Enhanced Air Quality | 1 |
| Credit 2 | Occupant Experience | 7 |
| Credit 3 | Accessibility and Inclusion | 1 |
| Credit 4 | Resilient Spaces | 2 |
| Credit 5 | Air Quality Testing and Monitoring | 2 |

| Project Priorities & Innovation (IN) | | 10 |
|---|---|---|
| Credit 1 | Project Priorities | 9 |
| Credit 2 | LEED Accredited Professional | 1 |

# LEED v5 Certification Levels


**LEED Certified**

40-49 Points

**LEED Silver**

50-59 Points

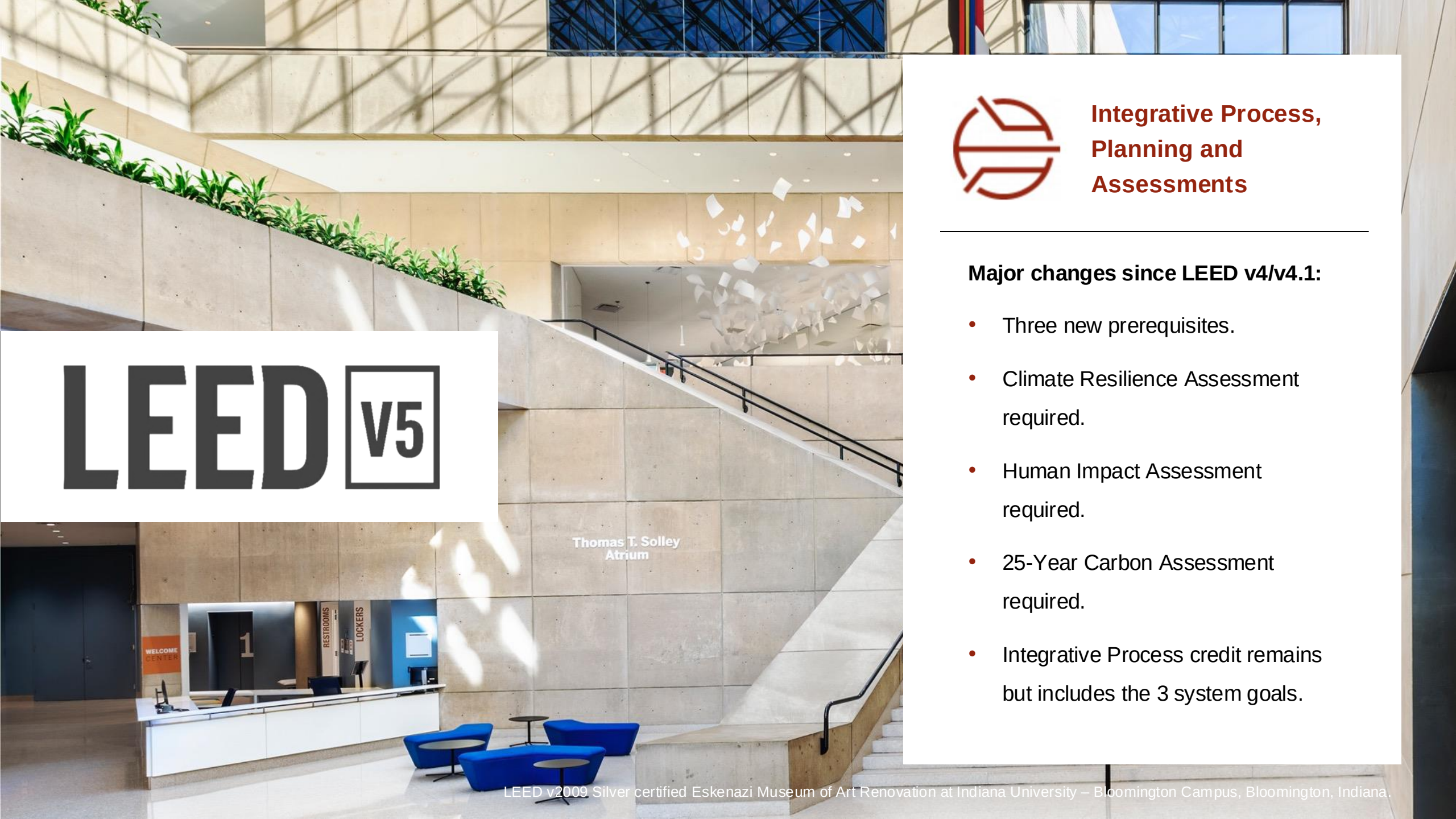
**LEED Gold**

60-79 Points

**LEED Silver**

80≥ Points

# Integrative Process, Planning and Assessments




LEED V5

## Integrative Process, Planning and Assessments

**Major changes since LEED v4/v4.1:**

- Three new prerequisites.
- Climate Resilience Assessment required.
- Human Impact Assessment required.
- 25-Year Carbon Assessment required.
- Integrative Process credit remains but includes the 3 system goals.

LEED v2009 Silver certified Eskenazi Museum of Art Renovation at Indiana University – Bloomington Campus, Bloomington, Indiana.

# Integrative Process, Planning & Assessments (IP)

| Credit No. | Credit Name | 1 Point |
|---|---|---|
| Prerequisite 1 | Climate Resilience Assessment | Required |
| Prerequisite 2 | Human Impact Assessment | Required |
| Prerequisite 3 | Carbon Assessment | Required |
| Credit 1 | Integrative Design Process | 1 |

**The three assessment reports that will become standard practice for any LEED project.**

**They are meant to open up conversations about resilience, human impact, and carbon.**

# Location & Transportation

LEED V5

## Location & Transportation

**Major changes since LEED v4/v4.1:**

- No prerequisites.
- Public transit service: up to 4 points.
- Transportation demand management.
- “Bike credit” remains, but integrated.
- “Electric vehicle credit” remains, but more expansive.

LEED v4/v4.1 Gold certified Innovation Hall at Indiana University – Indianapolis Campus, Indianapolis, Indiana.

# Location & Transportation (LT)

| Credit No. | Credit Name | 15 Points |
|---|---|---|
| Credit 1 | Sensitive Land Protection | 1 |
| Credit 2 | Equitable Development | 2 |
| Credit 3 | Compact and Connected Development | 6 |
| Credit 4 | Transportation Demand Management | 4 |
| Credit 5 | Electric Vehicles | 2 |

**Location will make or break many of the LT credits; but no prerequisites.**

# Sustainable Sites

LEED V5

## Sustainable Sites

**Major changes since LEED v4/v4.1:**

- Resilient site design is integrated.
- Minimizing site disturbances is required.
- Flood mitigation part of rainwater management.
- Rainwater management percentiles remain, but alternative option too.
- Bird-friendly glass part of addressing biodiverse habitat.

LEED v2009 and SITES certified The Center (The Heritage Group corporate headquarters), Indianapolis, Indiana.

# Sustainable Sites (SS)

| Credit No. | Credit Name | 11 Points |
|---|---|---|
| Prerequisite 1 | Minimized Site Disturbance | Required |
| Credit 1 | Biodiverse Habitat | 2 |
| Credit 2 | Accessible Open Space | 1 |
| Credit 3 | Rainwater Management | 3 |
| Credit 4 | Enhanced Resilient Site Design | 2 |
| Credit 5 | Heat Island Reduction | 2 |
| Credit 6 | Light Pollution | 1 |

**Sustainable Sites does not back down on rainwater management; also, resilient site design is new – and prominent.**

# Water Efficiency

LEED V5

## Water Efficiency

**Major changes since LEED v4/v4.1:**

- Revamped to be structurally simplified.
- Water metering and reporting have a prerequisite and a credit.
- Water efficiency has a prerequisite and a credit.
- Enhanced Water Efficiency “super credit” worth up to 8 points.

LEED v4/v4.1 Gold certified Center for the Sciences at Butler University, Indianapolis, Indiana.

# Water Efficiency (WE)

| Credit No. | Credit Name | 9 Points |
|---|---|---|
| Prerequisite 1 | Water Metering and Reporting | Required |
| Prerequisite 2 | Minimum Water Efficiency | Required |
| Credit 1 | Water Meter and Leak Detection | 1 |
| Credit 2 | Enhanced Water Efficiency | 8 |

**Water Efficiency credit category is not radically different than LEED v4, but there is more stringency and rigor.**

# Energy & Atmosphere

# LEED V5

## Energy & Atmosphere

**Major changes since LEED v4/v4.1:**

- Decarbonization Plan required.
- Based on ASHRAE 90.1-2019/22.
- Building Enclosure Commissioning (BECx) is now part of a prerequisite.
- Electrification: up to 5 points.
- Reducing peak thermal loads worth up to 5 points.
- Renewable energy: up to 5 points.
- Enhanced Cx: up to 4 points.

LEED v4/v4.1 Platinum certified Infosys Technology & Innovation Hub, Indianapolis, Indiana.

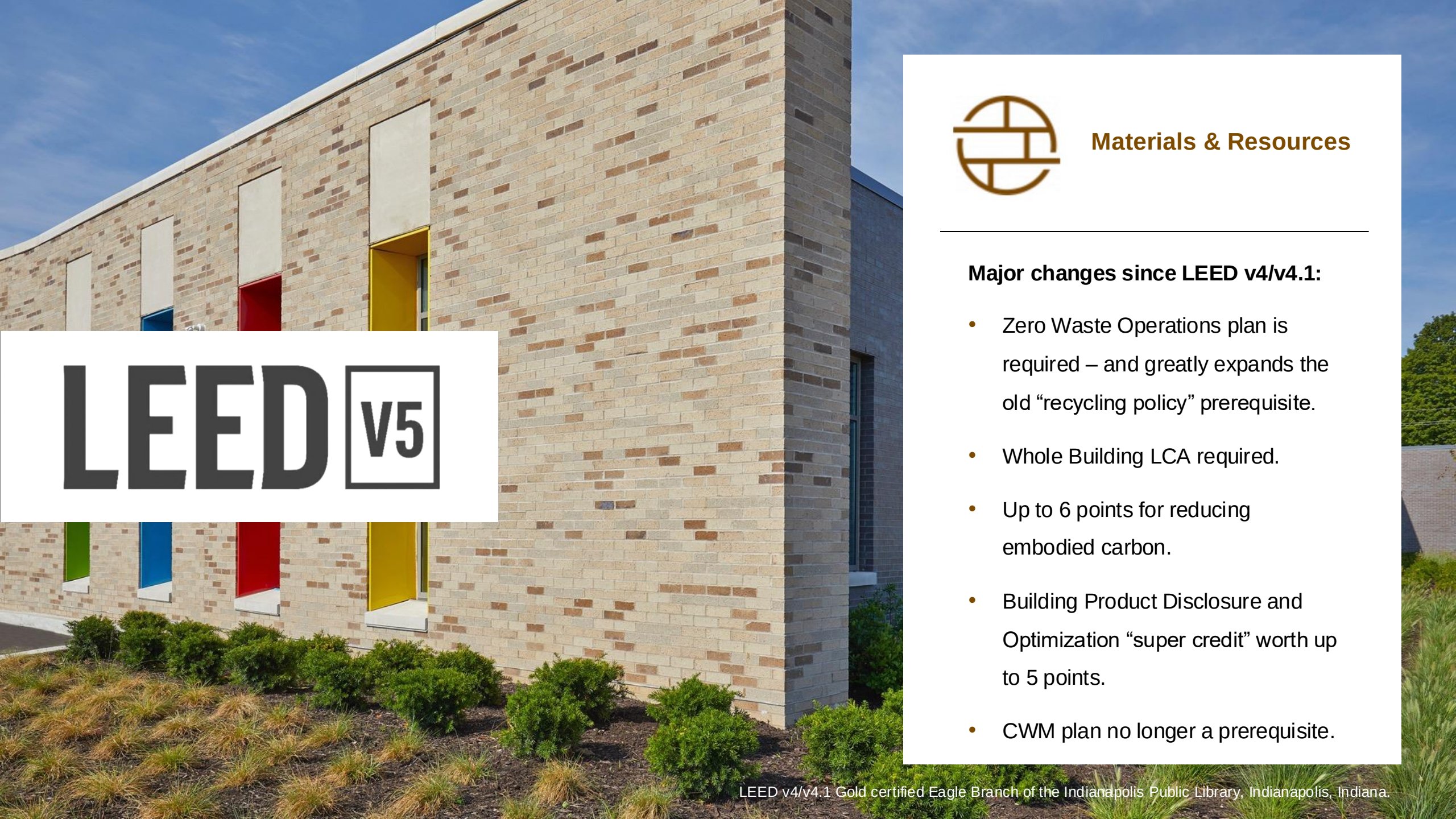
# Energy & Atmosphere (EA)

| Credit No. | Credit Name | 33 Points |
|---|---|---|
| Prerequisite 1 | Operational Carbon Projection and Decarbonization Plan | Required |
| Prerequisite 2 | Minimum Energy Efficiency | Required |
| Prerequisite 3 | Fundamental Commissioning | Required |
| Prerequisite 4 | Energy Metering and Reporting | Required |
| Prerequisite 5 | Fundamental Refrigerant Management | Required |
| Credit 1 | Electrification* | 5 |
| Credit 2 | Reduce Peak Thermal Loads | 5 |
| Credit 3 | Enhanced Energy Efficiency* | 10 |
| Credit 4 | Renewable Energy* | 5 |
| Credit 5 | Enhanced Commissioning | 4 |
| Credit 6 | Grid Interactive | 2 |
| Credit 7 | Enhanced Refrigerant Management | 2 |

**LEED v5's vision for the path to zero-carbon operational energy:**

**100% Electrification +**
**Reduce Peak Loads +**
**Smart Grid with Distributed Renewable Energy**

# Materials & Resources



LEED V5

## Materials & Resources

**Major changes since LEED v4/v4.1:**

- Zero Waste Operations plan is required – and greatly expands the old “recycling policy” prerequisite.
- Whole Building LCA required.
- Up to 6 points for reducing embodied carbon.
- Building Product Disclosure and Optimization “super credit” worth up to 5 points.
- CWM plan no longer a prerequisite.

LEED v4/v4.1 Gold certified Eagle Branch of the Indianapolis Public Library, Indianapolis, Indiana.

# Materials & Resources (MR)

| Credit No. | Credit Name | 18 Points |
|---|---|---|
| Prerequisite 1 | Planning for Zero Waste Operations | Required |
| Prerequisite 2 | Assess and Quantify Embodied Carbon | Required |
| Credit 1 | Building and Materials Reuse | 3 |
| Credit 2 | Reduce Embodied Carbon* | 6 |
| Credit 3 | Low Emitting Materials | 2 |
| Credit 4 | Building Product Disclosure and Optimization | 5 |
| Credit 5 | Construction and Demolition Waste Diversion | 2 |

**Reducing building sector embodied carbon is still an emerging practice.**

# Indoor Environmental Quality


# LEED V5

## Indoor Environmental Quality

**Major changes since LEED v4/v4.1:**

- Meet 62.1-2022; MERV 13 filters required.
- ETS expanded, includes no idling.
- Occupant Experience “super credit” worth 7 points and combines biophilic design, quality views, creating an adaptable environment, thermal comfort, acoustic comfort, visual comfort, and daylighting.
- Resilient design PCs now to credit.

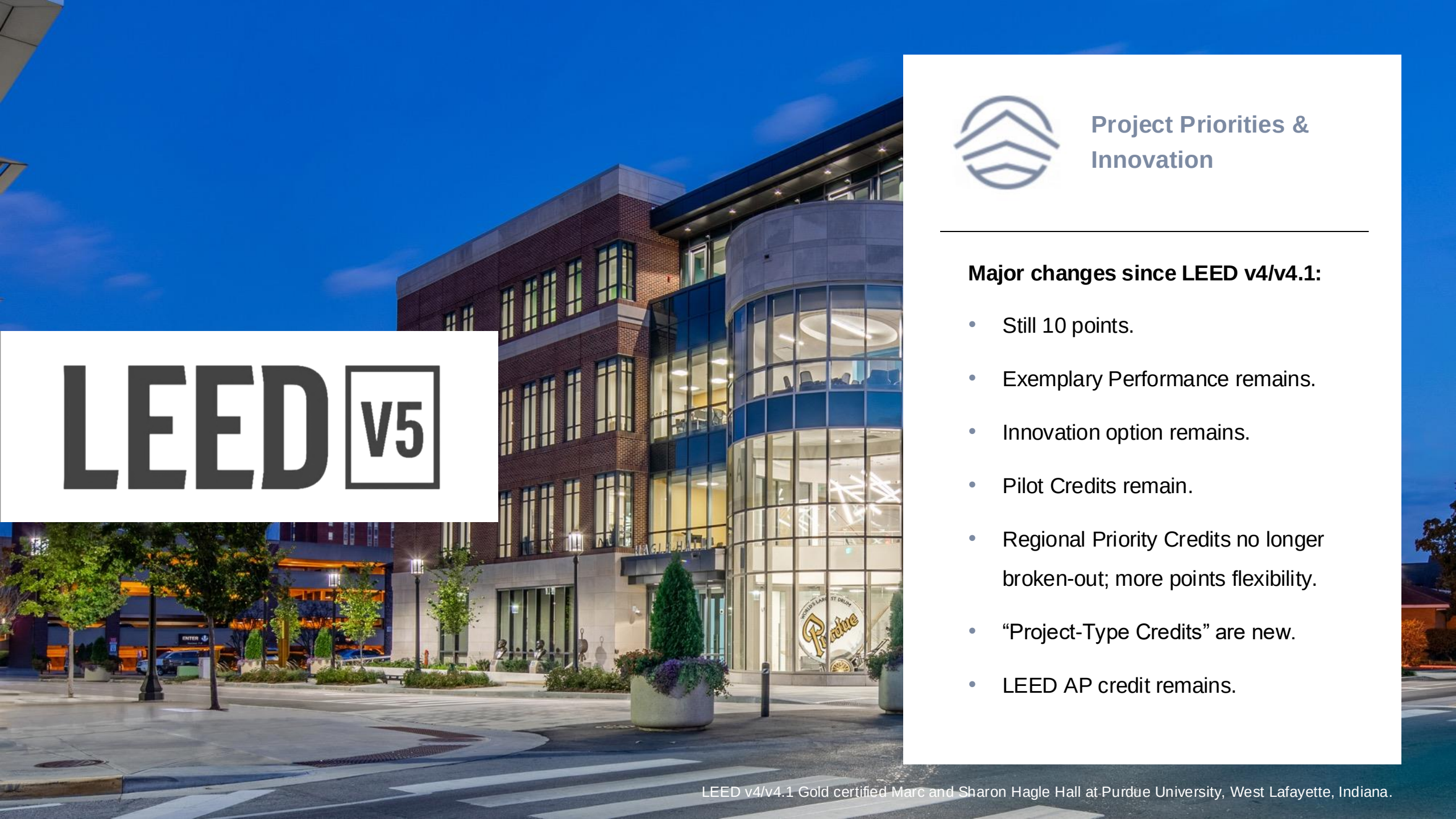
LEED v4/v4.1 Silver and Fitwel certified E. S. Witchger School of Engineering at Marian University, West Lafayette, Indiana.

# Indoor Environmental Quality (EQ)

| Credit No. | Credit Name | 13 Points |
|---|---|---|
| Prerequisite 1 | Construction Management Plan | Required |
| Prerequisite 2 | Fundamental Air Quality | Required |
| Prerequisite 3 | No Smoking or Vehicle Idling | Required |
| Credit 1 | Enhanced Air Quality | 1 |
| Credit 2 | Occupant Experience | 7 |
| Credit 3 | Accessibility and Inclusion | 1 |
| Credit 4 | Resilient Spaces | 2 |
| Credit 5 | Air Quality Testing and Monitoring | 2 |

**These robust IEQ credits make for myriad pathways for defining and achieving successful indoor environmental on projects.**

# Project Priorities & Innovation



LEED V5

## Project Priorities & Innovation

**Major changes since LEED v4/v4.1:**

- Still 10 points.
- Exemplary Performance remains.
- Innovation option remains.
- Pilot Credits remain.
- Regional Priority Credits no longer broken-out; more points flexibility.
- “Project-Type Credits” are new.
- LEED AP credit remains.

LEED v4/v4.1 Gold certified Marc and Sharon Hagle Hall at Purdue University, West Lafayette, Indiana.

# Project Priorities & Innovation (IN)

| Credit No. | Credit Name | 10 Points |
|---|---|---|
| Credit 1 | Project Priorities | 9 |
| Credit 2 | LEED Accredited Professional | 1 |

# IN Credit 1: Project Priorities

1-9 points

Achieve any combination of the following options (maximum 9 points):

**Option 1. Regional Priority**

Achieve a Regional Priority Credit (RPC) from USGBC's Credit Library.

AND/OR

**Option 2. Project-Type Priorities**

Achieve a Project Type Credit from USGBC's Credit Library.

AND/OR

**Option 3. Exemplary Focus**

Achieve an Exemplary Performance Credit from USGBC's Credit Library.

AND/OR

**Option 4. Pilot Credits**

Achieve a Pilot Credit from USGBC's Credit Library.

AND/OR

**Option 5. Innovation Strategies**

Achieve significant, measurable, environmental performance using a strategy not addressed in LEED.

Identify the following:

- Intent.
- Requirements for compliance.
- Proposed submittals to demonstrate compliance.
- Design approach or strategies used to meet the requirements.

**10 points (a certification level) remains contingent on innovation and prioritization.**


LEED
V5

# LEED Platinum Requirements in BD+C

| Credit No. | Credit Name | Points |
|---|---|---|
| **EAc1** | **Electrification**<br>(No on-site combustion) | **5** |
| **EAc3** | **Enhanced Energy Efficiency**<br>(Reduce 24% excluding on-site renewables; 80% including) | **8** |
| **EAc4** | **Renewable Energy**<br>(100% on-site or new off-site; or 100% off-site) | **5**<br>(or 2 if Tier 3) |
| **MRc2** | **Reduce Embodied Carbon**<br>(Reduce 20%) | **4** |

# LEED v5 for Design and Construction: New Construction (NC)

| Integrative Process, Planning and Assessments (IP) | | 1 |
|---|---|---|
| Prerequisite 1 | Climate Resilience Assessment | Required |
| Prerequisite 2 | Human Impact Assessment | Required |
| Prerequisite 3 | Carbon Assessment | Required |
| Credit 1 | Integrative Design Process | 1 |

| Location & Transportation (LT) | | 15 |
|---|---|---|
| Credit 1 | Sensitive Land Protection | 1 |
| Credit 2 | Equitable Development | 2 |
| Credit 3 | Compact and Connected Development | 6 |
| Credit 4 | Transportation Demand Management | 4 |
| Credit 5 | Electric Vehicles | 2 |

| Sustainable Sites (SS) | | 11 |
|---|---|---|
| Prerequisite 1 | Minimized Site Disturbance | Required |
| Credit 1 | Biodiverse Habitat | 2 |
| Credit 2 | Accessible Open Space | 1 |
| Credit 3 | Rainwater Management | 3 |
| Credit 4 | Enhanced Resilient Site Design | 2 |
| Credit 5 | Heat Island Reduction | 2 |
| Credit 6 | Light Pollution Reduction | 1 |

| Water Efficiency (WE) | | 9 |
|---|---|---|
| Prerequisite 1 | Water Metering and Reporting | Required |
| Prerequisite 2 | Minimum Water Efficiency | Required |
| Credit 1 | Water Meter and Leak Detection | 1 |
| Credit 2 | Enhanced Water Efficiency | 8 |

| Energy & Atmosphere (EA) | | 33 |
|---|---|---|
| Prerequisite 1 | Operational Carbon Projection and Decarbonization Plan | Required |
| Prerequisite 2 | Minimum Energy Efficiency | Required |
| Prerequisite 3 | Fundamental Commissioning | Required |
| Prerequisite 4 | Energy Metering and Reporting | Required |
| Prerequisite 5 | Fundamental Refrigerant Management | Required |
| Credit 1 | Electrification* | 5 |
| Credit 2 | Reduce Peak Thermal Loads | 5 |
| Credit 3 | Enhanced Energy Efficiency* | 10 |
| Credit 4 | Renewable Energy* | 5 |
| Credit 5 | Enhanced Commissioning | 4 |
| Credit 6 | Grid Interactive | 2 |
| Credit 7 | Enhanced Refrigerant Management | 2 |

| Materials & Resources | | 18 |
|---|---|---|
| Prerequisite 1 | Planning for Zero Waste Operations | Required |
| Prerequisite 2 | Assess and Quantify Embodied Carbon | Required |
| Credit 1 | Building and Materials Reuse | 3 |
| Credit 2 | Reduce Embodied Carbon* | 6 |
| Credit 3 | Low Emitting Materials | 2 |
| Credit 4 | Building Product Disclosure and Optimization | 5 |
| Credit 5 | Construction and Demolition Waste Diversion | 2 |

| Indoor Enviromental Quality (EQ) | | 13 |
|---|---|---|
| Prerequisite 1 | Construction Management Plan | Required |
| Prerequisite 2 | Fundamental Air Quality | Required |
| Prerequisite 3 | No Smoking or Vehicle Idling | Required |
| Credit 1 | Enhanced Air Quality | 1 |
| Credit 2 | Occupant Experience | 7 |
| Credit 3 | Accessibility and Inclusion | 1 |
| Credit 4 | Resilient Spaces | 2 |
| Credit 5 | Air Quality Testing and Monitoring | 2 |

| Project Priorities & Innovation (IN) | | 10 |
|---|---|---|
| Credit 1 | Project Priorities | 9 |
| Credit 2 | LEED Accredited Professional | 1 |

# An Introduction to LEED v5 BD+C

Daniel Overbey, AIA, NCARB, LEED Fellow, WELL AP, Fitwel Ambassador, EcoDistricts AP, ActiveScore AP,

LEED AP BD+C, ID+C, O+M

November 21, 2024

AIA Fort Wayne

browning day

BALL STATE UNIVERSITY