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LEED: Connecting the Environment and the Built World

LEED® O+M v4.1 Changes



Module Description

- Highlight the differences between two LEED versions: v4.0 and v4.1
- Discuss significant changes to the LEED O+M rating system
- Explain the Arc Platform and how it is used in LEED O+M v4.1
- Explain how to use LEED O+M v4.1 in v4.0 projects

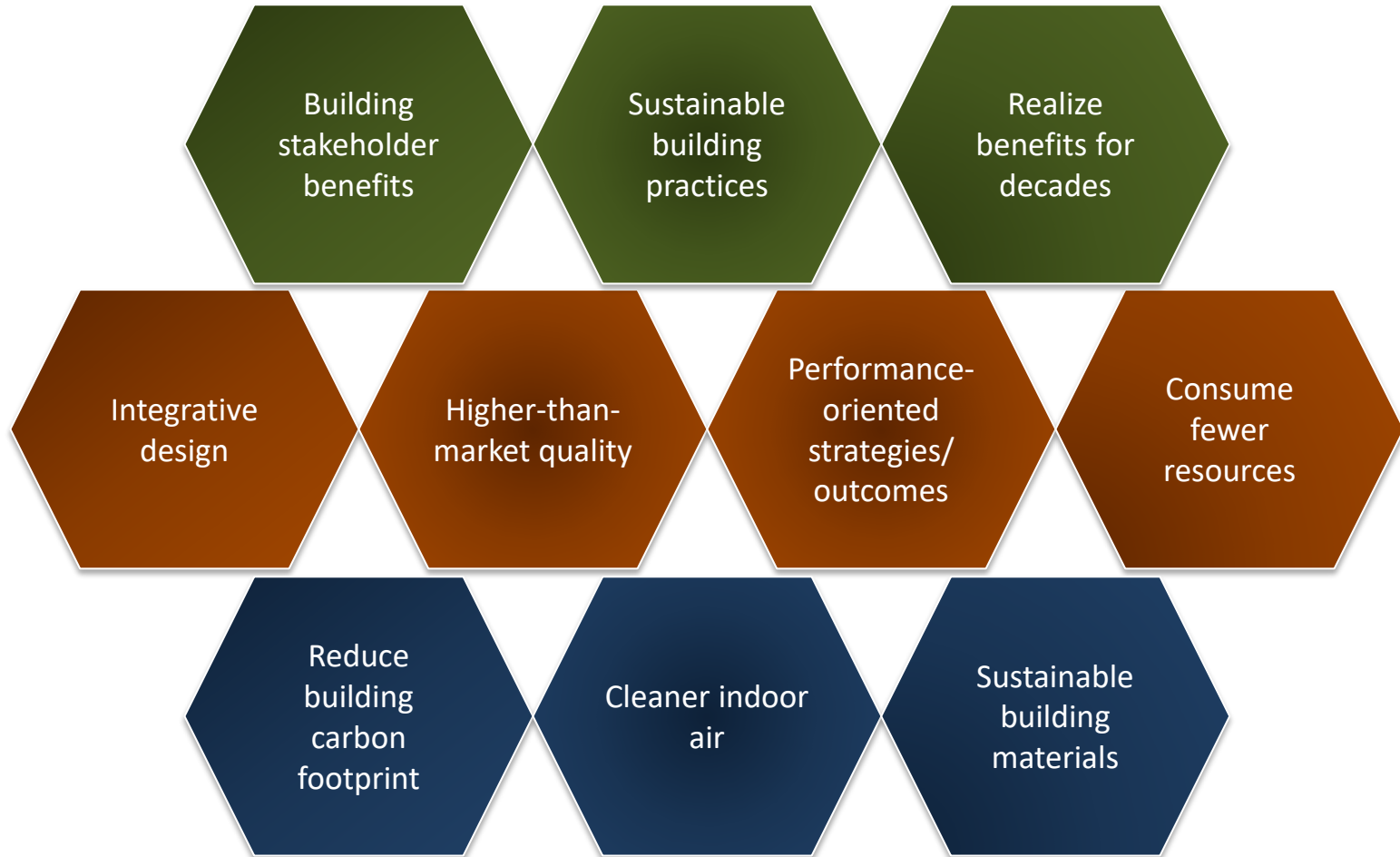


Module Objectives

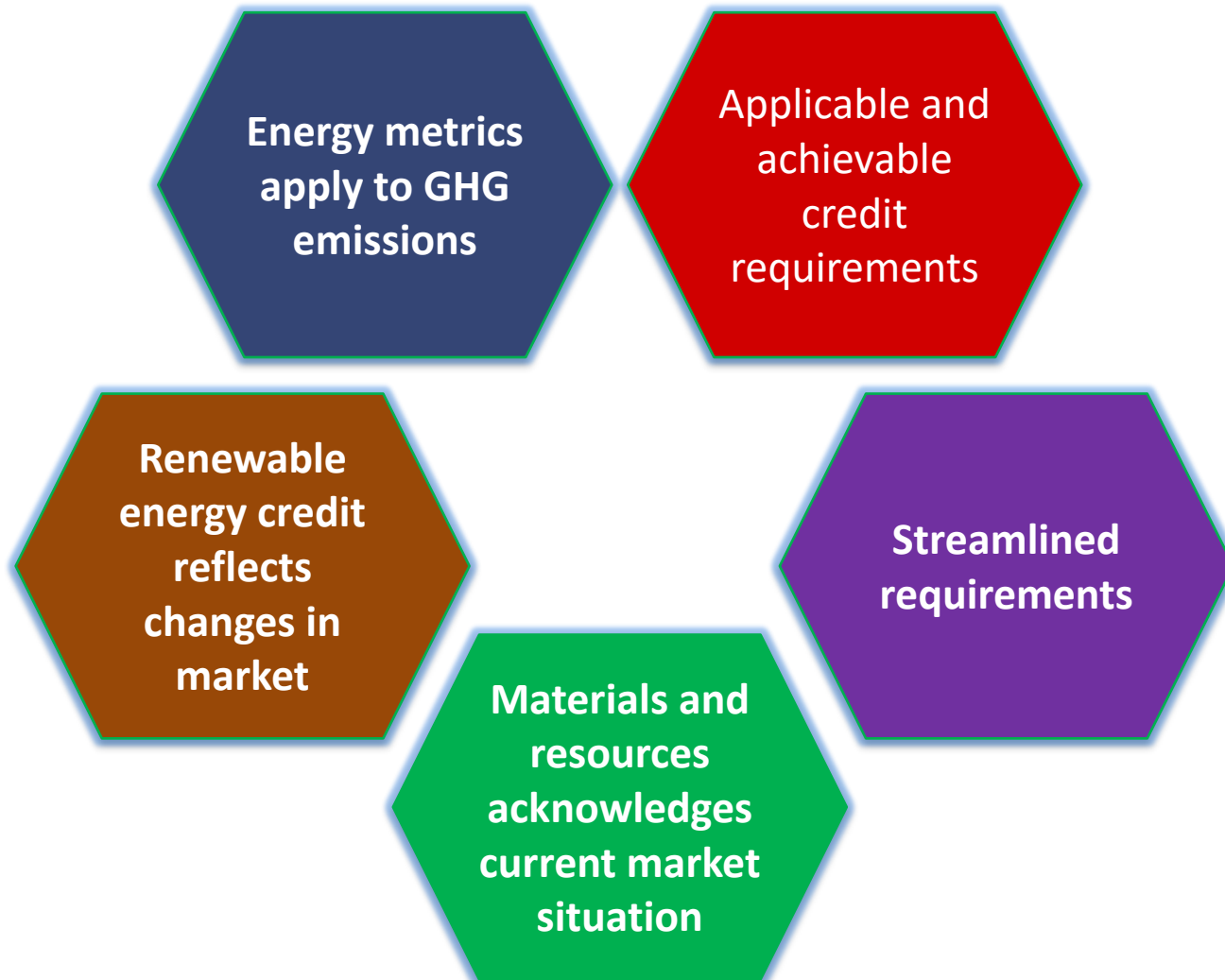
- Explain the goals of LEED O+M v4.1
- Explain the Arc Platform and how it is used in LEED O+M v4.1
- Explain prerequisites and credits no longer in the LEED O+M v4.1 rating system
- Explain the primary differences between LEED O+M v4.0 and v4.1
- Explain how to use LEED Online to substitute LEED O+M v4.1 credits in LEED O+M v4.0 projects
- Explain how to use LEED Online to certify your O+M project
- Explain how to use Arc platform to certify your O+M project



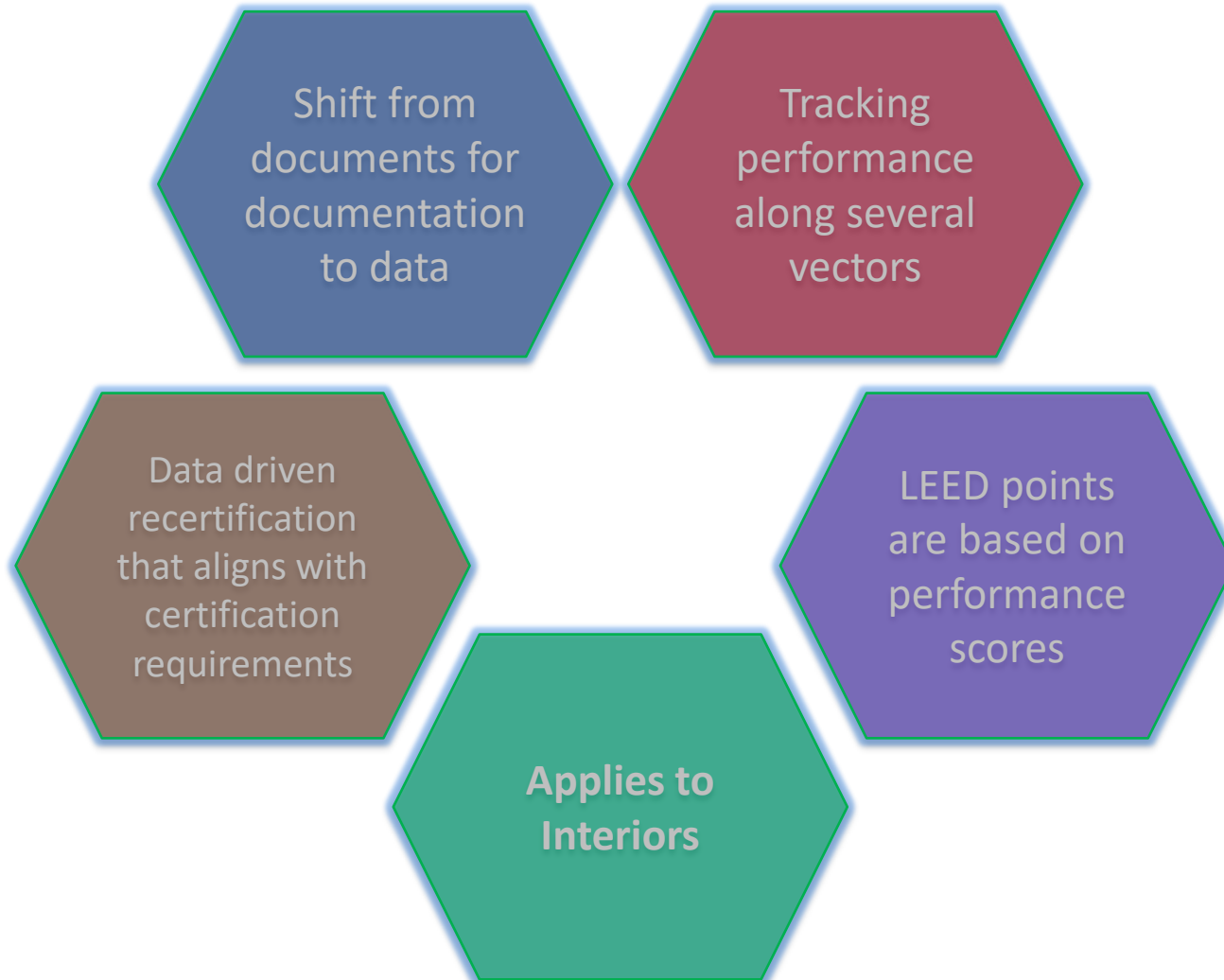
LEED v4.1 Goals



LEED v4.1 Practices



LEED O+M v4.1 Practices



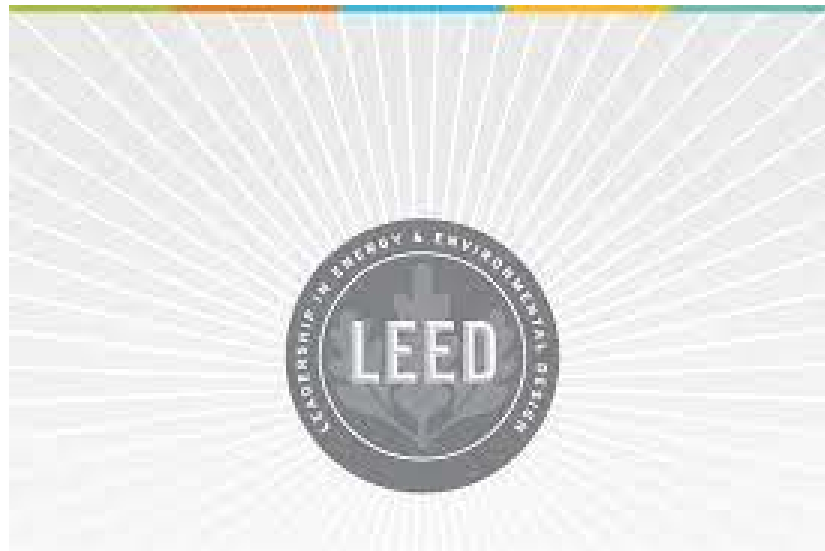
LEED O+M v4.1 Goals

- Performance-based pre-requisites
- Eliminate the 'performance period' approach
- Certification lasts 3 years
- Add two market adaptations
 - O+M Interiors
 - O+M Transit
- Removes six market adaptations
 - Schools
 - Retail
 - Data Centers
 - Hospitality
 - Warehouses and Distribution
 - Multifamily



LEED O+M v4.1 Process Changes

- 'Establishment' and 'Performance' requirements are consolidated as 'Requirements'
- Projects are required to use the Arc platform
- Projects certified in LEED BD+C or LEED ID+C achieve 10 prerequisite 'base points' automatically



LEED O+M v4.1 Process Changes – Arc Platform

- For projects benchmarking in ENERGY STAR Portfolio Manager
 - The data is transferred automatically
- Data is entered into Arc
 - Energy: Energy Consumption of the past 12 months
 - Data is entered manually on the ARC platform or
 - Automatically populated when connected to the Portfolio Manager
 - Water: Water Consumption of the past 12 months
 - Data is entered manually on the ARC platform or
 - Automatically populated when connected to the Portfolio Manager
 - Waste: Waste generated and diverted based on at least one waste stream audit
 - Transportation: GHG emissions due to occupants commuting based on an occupant survey
 - Human Experience: Monitor indoor air quality readings (CO2 / TVOC) and administer at least one occupant survey



LEED O+M v4.1 Eliminated Prerequisites

- Site Management Policy
- All Water Efficiency credit category prerequisites
- Minimum Energy Performance
- Building Level Energy Metering
- Ongoing Purchasing and Waste Policy
- Minimum Indoor Air Quality Performance



LEED O+M v4.1 Eliminated Credits

- Site development – Protect or Restore Habitat
- Site Improvement Plan
- All Water Efficiency credit category credits
- Existing Building Commissioning – Analysis
- Existing Building Commissioning – Implementation
- Ongoing Commissioning
- Advanced Energy Metering
- Renewable Energy and Carbon Offsets
- Purchasing – ongoing
- Purchasing – lamps
- Purchasing Facility Maintenance and Renovation
- Solid Waste Management – ongoing
- Solid Waste Management – Facility Maintenance and Renovation



LEED O+M v4.1 Eliminated Credits

- Green Cleaning – Custodial Effectiveness Assessment
- Green Cleaning – Products and Materials
- Green Cleaning – Equipment
- Indoor Air Quality Management Program
- Enhanced Indoor Air Quality Strategies
- Thermal Comfort
- Interior Lighting
- Daylight and Quality Views
- LEED AP (moved into Innovation Credit)
- Regional Priority



LEED O+M v4.1 New Prerequisites

- Transportation Performance*
- Water Performance*
- Energy Performance*
- Purchasing Policy
- Waste Performance*
- Minimum Indoor Air Quality
- Indoor Air Quality Performance*

*Required prerequisites with points assigned 

LEED O+M v4.1 Transportation Performance

- Prerequisite with points
- Replaces Alternative Transportation credit
- Arc calculates the transportation performance score

Transportation Performance Score	LEED Points
40 (Required)	6 (Required)
47	7
54	8
61	9
68	10
75	11
83	12
90	13
97	14



LEED O+M v4.1 Water Performance

- Only prerequisite/credit in the Water Efficiency credit category
- Prerequisite with points
- Requirements
 - Permanently install water meters that measure the total potable water use for the project and associated grounds.
 - All potable or reclaimed water supplied to the project must be metered.
 - Measure total potable water use on a monthly basis for twelve consecutive months
- The score is a value from 1-100 based on the project's water consumption per occupant and water consumption per floor area.
 - Additional points for this prerequisite are awarded for Water Performance Scores above 40



LEED O+M v4.1 Water Performance

Water Performance Score	LEED Points
40 (Required)	6 (Required)
44	7
50	8
57	9
64	10
70	11
77	12
84	13
90	14
97	15



LEED O+M v4.1 Energy Performance

- Prerequisite with points
 - No more EnergyStar ratings options
- Two energy performances measured
 - GHG Emissions
 - Score rates the building's total greenhouse gas emissions against the total greenhouse gas emissions of comparable high-performing buildings.
 - The score is a value from 1-100 based on the project's GHG emissions per occupant and GHG emissions per floor area.
 - Source energy
 - Score rates the building's total energy consumption against the total energy consumption of comparable high-performing buildings.
 - The score is a value from 1-100 based on the project's source energy consumption per occupant and per floor area.



LEED O+M v4.1 Energy Performance

GHG Emissions Score	LEED Points
40 (Required)	6.5 (Required)
41	7
44	7.5
47	8
50	8.5
54	9
57	9.5
60	10
63	10.5
66	11
69	11.5
72	12
75	12.5
78	13
81	13.5
84	14
87	14.5
90	15
93	15.5
96	16
99	16.5

Source Energy Score	LEED Points
40 (Required)	6.5 (Required)
41	7
44	7.5
47	8
50	8.5
54	9
57	9.5
60	10
63	10.5
66	11
69	11.5
72	12
75	12.5
78	13
81	13.5
84	14
87	14.5
90	15
93	15.5
96	16
99	16.5



LEED O+M v4.1 Energy Performance

- Combined, they form the Energy Performance Score
 - GHG emissions score and source energy score are each weighted 50% of the energy performance score.

Energy Performance Score	LEED Points	Energy Performance Score	LEED Points
40 (Required)	13 (Required)		
41	14	72	24
44	15	75	25
47	16	78	26
50	17	81	27
54	18	84	28
57	19	87	29
60	20	90	30
63	21	93	31
66	22	96	32
69	23	99	33



LEED O+M v4.1 Purchasing Policy

- Have in place an environmentally preferable purchasing (EPP) policy for materials and products purchased for the project during regular operations.
 - Include at a minimum:
 - Ongoing Consumables
 - Electronic Equipment
 - Lamps (indoor and outdoor, hard-wired and portable fixtures)
 - Office equipment, appliances, and audiovisual equipment
 - Electric powered equipment
- Should address performance targets for purchases that meet the criteria in MR Credit: Purchasing
- Must cover at least those product purchases within the building and site management's control



LEED O+M v4.1 Waste Performance

- Have in place storage locations for recyclable materials
- Safely store and dispose of batteries and all lamps
- Measure the total weight of waste (in lbs., kg, or tons) that is generated, and the total weight that is diverted from landfills and incineration facilities for one full year or from a waste analysis
 - Exclude any facility renovations waste



LEED O+M v4.1 Waste Performance

- The waste performance score rates the waste generated by the building against the waste generated by comparable LEED certified buildings.
 - The score is a value from 1-100 based on the project's total weight of waste generated and the total weight of waste diverted from landfills and incineration facilities.

Waste Performance Score	LEED Points
40 (Required)	3 (Required)
44	4
57	5
69	6
82	7
94	8



LEED O+M v4.1 Minimum Indoor Air Quality

- Maintain the ventilation system equipment and associated components based on Table 8.2 of ASHRAE 62.1-2016
 - Include information on ventilation system operation and preventative maintenance in the current facilities requirements and operations and maintenance plan (required for compliance with EA prerequisite Energy Efficiency Best Management Practices)
- For spaces with mechanical exhaust, test and confirm proper operation of the exhaust systems as outlined in the current facilities requirements and operations and maintenance plan
- Ventilate the project spaces mechanically or naturally



LEED O+M v4.1 Indoor Air Quality Performance

- Conduct an occupant satisfaction survey **and/or** an indoor air quality evaluation
 - For the occupant satisfaction survey, regular building occupants must be surveyed
 - Conduct the survey at least once per year, using the Arc Platform
 - Conduct at least one indoor air quality evaluation per year
 - Test for **any** of the following contaminants:

Inorganic Contaminants	Volatile Organic Compounds	
Carbon Monoxide (CO)	Acetaldehyde	Dichlorobenzene
Carbon Dioxide (CO ₂)	Benzene	Xylenes-total
Ozone (O ₃)	Styrene	Formaldehyde
PM2.5	Toluene	Total volatile organic compounds
	Naphthalene	

- Points are awarded based on the results from the CO₂ and TVOC measurements



LEED O+M v4.1 Indoor Air Quality Performance

- Obtain a minimum Human Experience Score of 40
 - The Human Experience Score is based on three components which are weighted differently:
 - Occupant satisfaction score (50% weighting)
 - CO₂ score (25% weighing)
 - TVOC score (25% weighting)

Human Experience Score	LEED Points	Human Experience Score	LEED Points
40 (Required)	8 (Required)	73	15
43	9	78	16
48	10	83	17
53	11	88	18
58	12	93	19
63	13	98	20
68	14		



LEED O+M v4.1 New Credits

- Rainwater Management
- Heat Island Reduction
- Site Management
- Grid Harmonization (renamed from Demand Response)
- Purchasing
- Green Cleaning



LEED O+M v4.1 Rainwater Management

- Only 1 point
- No change in requirements



LEED O+M v4.1 Heat Island Reduction

- Only 1 point
- Only 1 option
- Requirements
 - Have in place strategies to minimize the project's overall contribution to heat island effects and that meet the following criterion:

$$\frac{\text{Area of Nonroof Measures}}{0.50} + \frac{\text{Area of High-Reflectance Roof}}{0.75} + \frac{\text{Area of Vegetated Roof}}{0.50} \geq \frac{\text{Total Site Paving Area}}{\text{Total Roof Area}}$$

- High-Reflectance Roof SRI values:

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



LEED O+M v4.1 Site Management

- Intent: To provide environmentally sensitive site management practices that protect and enhance habitat, reduce pollutants and waste, protect soils and hydrology and reduce site domestic water use.
- Requirements
 - Conduct a site assessment to identify and document natural areas providing habitat
 - Have in place a site management plan that demonstrates how best practices are met

Invasive plant species	Snow/ice chemicals	Erosion prevention
Noise/air pollution from gas-power equipment	Compost plant waste	Reduce fertilizer use
Integrated Pest Management Plan	Organic mulch	Controlled irrigation
Materials and equipment storage		



LEED O+M v4.1 Grid Harmonization

- Renamed from Demand Response credit
- 1 point
- New case
 - Case 3: Load Flexibility and Management Strategies (1 point)
 - Strategies:
 - Peak Load Optimization: reduce on-peak load by at least 10% (1 point)
 - Flexible Operating Scenarios: move at least 10% of peak load by a time period of 2 hours (1 point)
 - On-site thermal and/or electricity storage: reduce on-peak load by at least 10% (1 point)
 - Grid resilience technologies: project served by utilities with resilience programs in place automatically achieve this credit (1 point)



LEED O+M v4.1 Purchasing

- Option 1. Ongoing Consumables
 - For at least one month, track all ongoing consumable purchases
- Option 2. Building Materials
 - For at least one month, track all building material purchases (including furniture) used and/or installed as part of space reconfigurations, additions/alterations, or renovations
- Option 3. Electronic Equipment
 - For at least one month, track all electronic equipment purchases
- Option 4. Food and Beverage
 - For at least one month, track all food and beverages
- For all options, purchase at least 50%, by cost, according to option-specific criteria



LEED O+M v4.1 Green Cleaning

- Replaces
 - Green Cleaning – Custodial Effectiveness Assessment
 - Green Cleaning – Products and Materials
 - Green Cleaning – Equipment
- Maximum 1 point
- Requirements
 - Option 1. Custodial Effectiveness Assessment OR
 - Option 2. Entryway Systems OR
 - Option 3. Powered janitorial equipment OR
 - Option 4. Cleaning products and materials



LEED O+M v4.1 Significantly Different Credits

- Innovation Credit
 - LEED AP credit is eliminated
 - LEED AP on the project team is requirement for Innovative Strategy and/or Pilot points
 - No exemplary performance points
 - Only 1 point possible
- Regional Priority Credit
 - Eliminated



LEED O+M v4.1 Credit Substitutions

1. Log in to LEED Online.
2. Navigate to the sidebar on the right and click on “v4.1 Sample Forms.”
3. Select the form that is applicable to your project.
4. Before entering information, click “Switch to Save Mode” in order to save the form offline.

from [USGBC.org/articles/how-document-leed-v41-credit-substitutions](https://www.usgbc.org/articles/how-document-leed-v41-credit-substitutions)



LEED O+M v4.1 Credit Substitutions

5. Create a Form ID, which will be the name of the saved form in your LEED Online account.
 - The form ID must be at least 10 characters in length and contain at least one uppercase letter, one lowercase letter, one number and a special character.

Tip: Sample forms do not automatically include the project name in the form, so you may want to include the project ID and/or name, as well as the credit name, in the form ID that you create (example: "ProjectName1_LTcElectricVehicles").



LEED O+M v4.1 Credit Substitutions

6. Once it's in Save Mode, complete the form.

Tip: Forms can be saved in your account as a draft by clicking the “Save” button at the bottom of the form.

7. When you are ready to submit your form, click “Download” at the top of the form. Next, upload the sample form and all supplemental documentation requested on the form to the special circumstances section of the LEED v4 credit in your project.

Tip: Once a form is downloaded, additional changes cannot be made to the offline form, but you can make changes online and re-download.



LEED O+M v4.1 Recertifying an O+M Project

There are 2 pathways to recertifying your LEED project using Arc.

Option 1: Starting in LEED Online

- Log in to LEED Online with your USGBC user account.
- Locate your certified project from within your project list and navigate to the “Details” tab.
- Select “Recertification.”
 - You will be redirected to Arcskoru.com and prompted to activate the project.
 - If you do not receive the prompt, you may not have the correct LEED team permissions to activate the project.
 - If the LEED building ownership has changed hands since the original certification, then you will need to complete a standard “Change of Owner” form and email it to the GBCI legal department.

(<https://www.usgbc.org/articles/achieve-leed-v41-om-certification-and-recertification->



LEED O+M v4.1 Recertifying an O+M Project

Option 2: Starting in Arc

- Log in to Arcskoru.com with your USGBC user account.
 - Projects that you are eligible to activate or access will be available in your “Projects” list.
 - You can also search for your project by name and ID by selecting the magnifying glass on the upper right-hand side of the header.
 - If you do not see your LEED-certified project in your project list or you cannot access the project, you will be prompted to request access from the current administrator; otherwise, you may not have the correct LEED team permissions.

(<https://www.usgbc.org/articles/achieve-leed-v41-om-certification-and-recertification->



LEED O+M v4.1 Additional Information

1. Achieve LEED v4.1 certification and recertification with Arc
2. How to document LEED v4.1 credit substitutions
3. LEED Link: LEED v4.1 guides



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