

Energy Performance Contracting (EPC) and LEED for Existing Buildings: O&M

The LEED-EB: Operations & Maintenance Rating System is divided into six credit categories.

Sustainable Sites

This category addresses building systems and maintenance activities related to the exterior of the building and the site area within and next to the project boundary, as well as reducing the use of personal automobiles running on fossil fuels for commuting to work, reducing the heat island effect, and reducing light pollution.

Water Efficiency

This category addresses plumbing fixture and fitting efficiency, metering and tracking of water use, landscape irrigation and cooling tower water management.

Energy & Atmosphere

This category addresses the building's energy performance, building commissioning, refrigerant management, measuring and tracking energy use, renewable energy and emissions reduction reporting.

Materials and Resources

This category addresses sustainable purchasing and solid waste management.

Indoor Environmental Quality

This category addresses outdoor air ventilation, indoor air quality, occupant comfort and control of environmental systems and green cleaning.

Innovation in Operations

This category provides the building operations, maintenance, and upgrade teams with the opportunity to earn points for additional environmental benefits achieved beyond those already addressed by the rating system. Points can be attained in this category by achieving exemplary performance for an existing defined credit or by implementing an operation, a maintenance practice or an upgrade not already addressed in the rating system.

Identifying Savings

Several credit categories can be directly affected by EPC projects. Tables 1.1 to 1.5 below show each prerequisite and credit included in the LEED-EB: O&M Rating System. The first column names the prerequisite or credit. The next column identifies those credits that are **essential** for generating the savings required for a viable paid-from-savings project. The third column lists other credits that are related to the essential credits and have the **potential** to be included in the project (since those trades will already be on the project site), while the last column lists credits that have a **minor financial impact** on the project and could possibly be included.

The nature of the EPC project and the specific measures it can include will depend on many variables. In some cases, state statutes may dictate what can or cannot be included. In other cases, the capabilities of the project provider or contractor doing the work will determine which measures are proposed to the owner. Therefore, the following definitions apply to the terms used in Tables 1.1 to 1.5.

Essential – As most all EPC projects require the generation of utility cost savings, these measures are essential to the project. Items in this column are the most likely to be included in the project in order to generate utility cost savings.

Potential – These types of measures may or may not directly produce utility cost savings but are nevertheless related (similar trade or engineering discipline) to the measures that do make contributions to the savings stream.

Minor Financial Impact – These measures could possibly be included in the project depending on the capabilities of the contractor. Unless otherwise prohibited by law, almost any measure that involves installing materials or equipment, or a service deliverable, can be included in a contract for project delivery.

The LEED-EB: Operations & Maintenance Rating System includes many policies, programs, plans, and tracking and record-keeping processes that must be adopted and maintained by the owner’s organization. Accomplishing these activities is dependent on the owner’s capabilities and commitment to the measure or process being implemented. However, even these types of measures could be included in a contract as long as the risk of non-performance for that measure was equitably placed on the party that has the most control over its accomplishment—in this case, the owner. The project provider’s role in this type of measure may take the form of guidance, assistance, training, providing materials such as policy or planning templates and examples, or submitting documents needed for certification.

Table 1.1 – Sustainable Sites Prerequisites and Credits

Title (Points)	Essential	Potential	Minor Financial Impact
SS c1 – LEED Certified Design & Construction			
SS c2 – Building Exterior and Hardscape Management Plan			Plan development
SS c3 – Integrated Pest Management, Erosion Control, and Landscape Management Plan			Plan development
SS c4 – Alternative Commuting Transportation			Conduct survey
SS c5 – Site Disturbance – Protect or Restore Open Habitat			Native plants, green roof
SS c6 – Stormwater Quantity Control			Structural measure
SS c7.1 – Heat Island Reduction – Non Roof		Shade structures, pervious paving	
SS c7.2 – Heat Island Reduction – Roof		Roof replacement	
SS c8 – Light Pollution Reduction		Interior, exterior light fixtures (full cutoff)	

Roof replacements can be a part of a typical PC project, especially if roof insulation is added or “cool roofs” are installed. Installation of a “cool roof” or “green roof” may allow the accomplishment of credit SS7.2. It is also possible for the owner to include other green performance measures in the project, such as landscaping materials, stormwater management structures, shade structures or pervious paving materials.

Table 1.2 – Water Efficiency

Title	Essential	Potential	Minor Financial Impact
WE p1 – Minimum Indoor Plumbing Fixture and Fitting Efficiency	Plumbing fixture upgrades		
WE c1 – Water Performance Measurement	Install water meters/submeters		
WE c2 – Additional Indoor Plumbing Fixture and Fitting Efficiency	Plumbing fixture upgrades		
WE c3 – Water Efficient Landscaping	Irrigation system		
WE c4 – Cooling Tower Water Management	Chemical treatment system		

Plumbing fixture efficiency measures are a prime target for EPC projects because they add to the project savings stream. Additional items that can easily be installed as part of the project because they closely relate to the type of work being performed include water meters/submeters, irrigation systems, chemical treatment systems, and cooling tower non-potable water source systems.

Table 1.3 – Energy & Atmosphere

Title	Essential	Potential	Minor Financial Impact
EA p1 – Energy Efficiency Best Management Practices – Planning, Documentation, and Opportunity Assessment	Energy audit		
EA p2 – Minimum Energy Efficiency Performance	Efficiency Measures		
EA p3 – Fundamental Refrigerant Management		Refrigerants	
EA c1 – Optimize Energy Efficiency Performance	Efficiency Measures		
EA c2.1 – Existing Building commissioning – Investigation and Analysis		ASHRAE Level II Energy Audit or commissioning study	
EA c2.2 – Existing Building commissioning – Implementation	Implement Measures		
EA c2.3 – Existing Building commissioning – Ongoing Commissioning	Commissioning		
EA c3.1- Performance Measurement – Building Automation System	System installation		
EA c3.2 – Performance Measurement – System Level Metering	System installation		
EA c4 – On-site and Off-site Renewable Energy		Install system	
EA c5 – Enhanced Refrigerant Management		Refrigerants	
EA c6 – Emissions Reduction Reporting			Provide report

Energy efficiency is the prime target of an EPC project. However, the project must achieve a minimum level of energy efficiency performance to qualify for a LEED certification. Building Automation Systems (BAS), EA c3.1, are often included in EPC projects as a utility cost saving measures. This credit should be reviewed prior to developing specifications for such systems to determine how points might be achieved under it. For example, just having the system installed will not in itself meet the LEED credit requirements. To earn points for this credit, the owner must also carry out a BAS Preventive Maintenance Program that ensures proper functioning and calibration of all BAS components.

Performance measurement, EAc3.2, is a credit related to the project’s measurement and verification (M&V) process. Most EPC projects, particularly performance contracts, will require M&V processes for verifying levels of efficiency performance and savings. The owner may want to consider whether the installation of permanent monitoring systems will meet long-term sustainability goals (as well as LEED credit requirements) or to stay with the typical approach of temporary and portable monitoring systems.

Projects that involve the replacement of cooling systems will likely involve specifying and using certain refrigerants. This should be considered early in the project if compliance with EAp3 or EAc5, Enhanced Refrigerant Management, is sought.

System commissioning is an essential aspect of an EPC project because it is vitally important that the installed systems function as intended to produce the savings stream. EAc2.1, 2.2, and 2.3 involve various aspects of commissioning and should be reviewed prior to project development to determine the level of effort needed to achieve the desired number of points. Some of these credits also offer an auditing compliance path that could easily be accomplished in the early phase of project development. If acted on by the owner, information revealed during the investigation and analysis phase of commissioning could generate additional savings.

Some EPC projects include renewable energy systems. In many cases, these systems are funded through a financial mechanism other than the savings stream provided by the project. If these systems are included in the project, they may be able to achieve points toward Renewable Energy, EAc4. Achieving EAc6, Emissions Reduction Reporting, requires minimal additional effort since EPA’s Portfolio Manager must be used to determine the energy performance rating for the building. The additional emissions information for this LEED credit can also be found in Portfolio Manager.

Table 1.4 – Materials & Resources

Title	Essential	Potential	Minor Financial Impact
MR p1 – Sustainable Purchasing Policy			Review existing, draft document
MR p2 – Solid Waste Management Policy			Review existing, draft document
MR c1 – Sustainable Purchasing: Ongoing Consumables			Develop program
MR c2 – Sustainable Purchasing: Durable Goods			Develop program
MR c3 – Sustainable Purchasing: Facility Alterations and Additions		Project materials specification	
MR c4 – Sustainable Purchasing: Reduced Mercury in Lamps		Order, install	
MR c5 – Sustainable Purchasing: Food			Develop program
MR c6 – Solid Waste Management: Waste Stream Audit			Conduct audit
MR c7 – Solid Waste Management: Ongoing Consumables		Order, install	Develop program
MR c8 – Solid Waste Management: Durable Goods			Develop program
MR c9 – Solid Waste Management: Facility Alterations and Additions		Diversion of construction waste	

Most credits in the Materials & Resources category involve actions that either the owner must lead or that are integral to operations and maintenance activities controlled by the owner. Even in these cases, however, there are opportunities where support may be provided through the EPC project. The facility alterations implemented under an EPC project can have an effect on whether the project

achieves MRc3 – Sustainable Purchasing: Facility Alterations and Additions. This credit should be reviewed early in the project development phase to determine which materials should be specified in the project. This is also true of the specification of reduced mercury in lamps (MRc4) and the diversion of construction waste from the project (MRc9).

Table 1.5 – Indoor Environmental Quality

Indoor Environmental Quality	Essential	Potential	Minor Financial Impact
EQ p1 – Minimum Indoor Air Quality Performance		Design, install	
EQ p2 – Environmental Tobacco Smoke (ETS) Control			Assessment, policy development
EQ p3 – Green Cleaning Policy			Policy development
EQ c1.1 – IAQ Best Management Practices: IAQ Management Program			Conduct audit
EQ c1.2 – IAQ Best Management Practices: Outdoor Air Delivery Monitoring		Design, install	
EQ c1.3 – IAQ Best Management Practices: Increased Ventilation		Design, install	
EQ c1.4 – IAQ Best Management Practices: Reduce Particulates in Air Distribution		Design, install	
EQ c1.5 – IAQ Best Management Practices: IAQ Management for Facility Alterations and Additions		Construction activity specification	
EQ c2.1 – Occupant Comfort: Occupant Survey			Conduct survey
EQ c2.2 – Controllability of Systems – Lighting		Design, install	
EQ c2.3 – Occupant Comfort: Thermal Comfort Monitoring		Design, install	
EQ c2.4 – Daylight and Views		Design, install	
EQ c3.1 – Green Cleaning: High-Performance Cleaning Program			Program development
EQ c3.2 – Green Cleaning: Custodial Effectiveness Assessment			Conduct Assessment
EQ c3.3 – Green Cleaning: Purchase of Sustainable Cleaning Products and Materials			Program guidance
EQ c3.4 – Green Cleaning: Sustainable Cleaning Equipment			Program guidance
EQ c3.5 – Green Cleaning: Indoor Chemical and Pollutant Source Control			Program guidance
EQ c3.6 – Green Cleaning: Indoor Integrated Pest Management			Program development

The Indoor Environmental Quality credit category also focuses mostly on owner operations and maintenance or tasks that are largely under the control of the owner. However, there are some credits that should be reviewed by the project team for possible inclusion in the EPC project.

Outdoor air introduction (EQp1) is one of the more significant minimum requirements in the rating system. Many code jurisdictions will already require buildings be brought into compliance with the prevailing codes if a renovation project is undertaken. These building system modifications can be accomplished along with the system replacement. This can have financial implications for the project’s economics if system retrofit capacities are larger than the replaced system due to increased air handling and conditioning requirements. The energy load may increase due to this type of modification. However, the owner will

want to weigh the benefit of having improved IAQ and the positive impact it will have on employee productivity and reduced absenteeism.

Several of the IAQ Best Management Practices credits (EQc1.2 to 1.5) include outside air delivery monitoring, amounts of outside air ventilation specified for the project if mechanical systems are involved, and air filter specifications.

Occupant control of lighting (EQc2.2) and thermal comfort (EQc2.3) can be addressed in an EPC project, especially if it relates to one of the systems being installed. Again, this measure should also be reviewed early in the project development phase to determine the economic feasibility of adding it to the project in a way that will help achieve points for the specified credit.

Credit for daylighting and views are embedded in the structure of the existing building. In most cases where the existing building does not already have these features, there will be only very limited opportunities to make this a part of the project.