Version: V03

LEED v4 BD+C: New Construction

Minimum Energy Performance

Informative Note:

This form and prerequisite requirements apply to projects subject to the LEED v4 BD+C update effective March 1, 2024, which raises the threshold for energy performance and incorporates a dual metric to evaluate and incentivize efficiency improvements and greenhouse gas emissions reductions.

Projects using ASHRAE 90.1-2016 Appendix G (or later) should select LEED v4.1 credit substitution and use the LEED v4.1 credit forms for EA Prerequisite Minimum Energy Performance and EA Credit Optimize Energy Performance.

Unit Type: (•) IP (inch-pound) ( ) SI (International System of Units)

☐ Project meets the mandatory requirements of ASHRAE 90.1-2010, Sections 5.4, 6.4, 7.4, 8.4, 9.4, and 10.4. or approved equivalent standard as applicable to the project scope of work.

Summary Reports:

Upload Energy modeling reports and provide the following reports for both the proposed and the 0 degree buildings:

- Simulation input summary reports:
  - Sample of the wall, roof, floor, and window assembly inputs showing U-values and window SHGC, as well as the infiltration for a few representative spaces.
  - Sample lighting and plug load inputs for a few representative spaces.
  - Sample inputs at the thermal zone, system, and plant level (as applicable) for each system type, including the cooling, heating, fans, controls, outside air, and service water heating system.
- Simulation output summary reports:
  - Energy consumption by end use and fuel source
  - Total energy consumption and cost by fuel source
  - Total energy consumption and greenhouse gas emissions by fuel source
- Any additional reports and exceptional calculations referenced in the Minimum Energy Performance Calculator for the project application.

Minimum Energy Performance Calculator:

Upload the completed Minimum Energy Performance Calculator (found under the prerequisite's "Resources" tab in the Credit Library).

Metrics (Source Energy, Cost, Greenhouse gas emissions, Alternative Metric)

- **Source Energy Conversion Factors:**

  Identify the data source used for site-to-source energy conversion factors.

  Energy Star Portfolio Manager (US)

- **GHG Emissions Factors:**

  Identify the data source used for GHG emissions factors.

  Energy Star Portfolio Manager (US)

- **Alternative Metric (if applicable):**

  If using an alternative metric referenced in the LEED Credit Library (Pilot ACP, LEED Interpretation, etc.), identify the metric used.

Demand Adjusted Energy (Pilot ACP 161)

Upload the following (if applicable)

- Cost:
  - If using cost as a metric for compliance, upload published references for the utility rates or tariffs per energy source (including for EIA state average rates).
- Source Energy:
  - For projects outside the US and Canada referencing published national source energy conversion factors, upload published references with any additional derivations (source-to-site ratios shall be at least one for all electricity and combustible fuel sources).
- GHG Emissions:
  - For projects with hourly emissions factors, upload the LEED Hourly Cambium, Demand Adjusted Energy Metrics Calculator (found under the prerequisite's "Resources" tab in the Credit Library).
  - For projects with custom greenhouse gas emissions factors, upload the published reference for the factor(s) used – based on the country location or grid region.
- Alternative Metric:
  - For projects using an alternative metric referenced in the LEED Credit library, upload the additional documentation listed in the LEED guidance for the referenced metric.

For projects with on-site or on-campus renewable energy:

Upload on-site renewable energy plans indicating location of renewable energy system, and relevant design details (e.g. PV module capacity, quantity, inverter capacity, tilt, orientation, etc. for a photovoltaic array).

Note: Projects must document commissioning of these systems in EA Prerequisite Fundamental Commissioning / EA Credit Enhanced Commissioning.

For projects pursuing EA Credit Optimize Energy Performance, upload the following:

Energy Efficiency Analysis:

Upload a narrative briefly summarizing the analysis of energy efficiency measures completed early in design:

- Efficiency measures analyzed.
- Analysis method used.
- Decision making process incorporating results of the analysis.

A report containing the information above may be uploaded in lieu of a summary narrative.

New off-site renewable energy (if applicable):

If subtracting greenhouse gas emissions for new off-site renewable systems, document a community renewable system in LEED v4 EAc Renewable Energy Production or provide the following additional information for Tier 2 New Renewable systems documented in LEED v4.1 EAc Renewable Energy:

- Contract documentation identifying the Tier 2 renewable generation location:
  - US Projects: eGrid region of renewable generation.
  - Canadian Projects: Province of renewable generation.
  - Outside the US and Canada: Country of renewable generation.
- Brief description of the method for quantifying the GHG emissions associated with off-site renewable energy. Projects utilizing hourly GHG emissions shall include a description of the method for generating the hourly Tier 2 renewable generation.

For projects pursuing EA Credit Grid Harmonization:

Upload On-peak electrical demand documentation: Provide the energy modeling output report that shows the on-peak electrical demand.

Provide the following values from the Minimum Energy Performance Calculator or supplemental summary documents uploaded in EAp: Minimum Energy Performance:

Annual Energy Results

Table 1. Annual Energy Use.
For each metric, report the total proposed annual results (prior to subtracting the renewable contribution), the percentage improvement in performance, and the percentage unregulated loads as reported in the LEED v4 Minimum Energy Performance Calculator.

	Total Proposed Annual Use (prior to subtracting renewable contribution)	Units	Percentage Improvement (compared to ASHRAE 90.1-2010 or approved equivalent standard)			Percent Unregulated
			Excluding renewable contribution	Including renewable contribution		
				Onsite[1]	Onsite + New Offsite[2]	
Site Energy		Btu x 10^6/yr	0 %	0 %	0 %	0 %
Source Energy		Btu x 10^6/yr	0 %	0 %		0 %
Energy Cost		$ (USD)	0 %	0 %		0 %
GHG Emissions		kg CO2e/yr	0 %	0 %	0 %	0 %
Alternative Metric (Optional)[3]		Btu x 10^6/yr	0 %	0 %		0 %

Table 1 Notes:

1. Onsite renewable energy contribution is recognized for EA Prerequisite Minimum Energy Efficiency and EA Credit Optimize Energy Performance for all referenced metrics.
2. New offsite renewable energy contribution documented as community renewable energy in LEED v4 EAc Renewable Energy Production or as Tier 2 new off-site renewable energy in LEED v4.1 EAc Renewable Energy is recognized for EAc Credit Optimize Energy Performance compliance for the greenhouse gas emissions metric.
3. Complete the fields for *Alternative Metric* if using an alternative metric referenced in the LEED Credit Library.

Table 2. Percent of Total Annual Site Energy Consumption.
Enter the percentage of energy consumption by energy source for the baseline design and the proposed design (prior to subtracting renewable contribution).

	Electricity	Fuel	District Energy	
			Heating	Cooling
Baseline Site Energy	%	0 %	0 %	0 %
Proposed Site Energy	%	0 %	0 %	0 %

Compliance Results:

EA Prerequisite Minimum Energy Performance compliance is determined per Table 3.

Table 3. Prerequisite minimum percentage improvement beyond ASHRAE 90.1-2010 Appendix G (Cost, or Source Energy, or GHG Emissions[1])

New Construction, Major Renovation, Schools, Warehouses & Distribution Centers, Hospitality	Core and Shell, Data Centers, or projects with unregulated energy > 50% of proposed for referenced metric	Healthcare
10%	8%	5%

1. Excludes the contribution of GHG emissions offset by new off-site renewable energy systems.

EA Credit Optimize Energy Performance. Points are awarded as the sum of points documented in Table 4 using a metric of cost or source energy, and the points documented in Table 5 using a metric of greenhouse gas emissions.

Table 4. Optimize Energy Performance points for percentage improvement beyond ASHRAE 90.1-2010 Appendix G (Cost or Source Energy)

Points	New Construction, Major Renovation, Warehouses & Distribution Centers, Hospitality	Schools	Core and Shell, Data Centers, or projects with unregulated energy > 50% of proposed for referenced metric	Healthcare
1	20%	20%	10%	7%
2	25%	25%	15%	10%
3	30%	30%	20%	15%
4	35%	35%	25%	20%
5	40%	40%	30%	25%
6	45%	45%	35%	30%
7	50%	50%	40%	35%
8	55%	60%	45%	40%
9	60%	-	50%	45%
10	-	-	-	50%
Exemplary Performance	100%	100%	100%	100%

Table 5. Optimize Energy Performance points for percentage improvement beyond ASHRAE 90.1-2010 Appendix G (Greenhouse Gas Emissions)

Points	New Construction, Major Renovation, Warehouses & Distribution Centers, Hospitality	Schools	Core and Shell, Data Centers, or projects with unregulated energy > 50% of proposed for referenced metric	Healthcare
1	20%	20%	10%	7%
2	25%	25%	15%	10%
3	30%	30%	20%	15%

4	35%	35%	25%	21%
5	42%	42%	32%	27%
6	50%	50%	40%	35%
7	60%	60%	50%	45%
8	70%	70%	60%	55%
9	85%	-	75%	65%
10	-	-	-	80%
Exemplary Performance	100%	100%	100%	100%

Alternative Paths:

If Minimum Energy Performance compliance and/or Optimize Energy Performance compliance are documented using alternative energy efficiency standards and/or prescriptive paths referenced in the LEED Credit Library (Pilot ACP, LEED Interpretation, etc.), upload any additional required documentation for the referenced path, and provide the following additional information as applicable to the project:

- **For projects referencing an approved equivalent energy efficiency standard:**

  Indicate the referenced standard used to demonstrate compliance.

- **For projects documented using a prescriptive path:**

  Indicate the project climate zone:

Indicate any of the following that apply to the project:

Electrification:

- ○ Emissions-free operation from on-site combustion.
- ○ Systems capable of operating without onsite combustion except at very low outside air temperatures:

Infiltration:

Indicate the measured air leakage across the building envelope or in Air changes per hour:

cfm/ft2 at 75 Pascal (0.3 in H20)

Ventilation Heat Recovery:

- ☐ The project has ventilation heat recovery used to meet the credit criteria.

Peak thermal loads:

Peak Heating load	Peak Cooling Load	Units	Sensible or Latent
		Btu-h/ft^2	Sensible

Additional Efficiency measures:

The project implemented additional measure for the following systems:

- [ ] Envelope
- [ ] HVAC
- [ ] Domestic hot water(DHW)
- [ ] Refrigeration
- [ ] Elevators,Escalators and/or Moving Walkways
- [ ] Unregulated Loads

Special Circumstances

Describe the circumstances limiting the project team's ability to provide the submittals required in this form. Be sure to reference what additional documentation has been provided, if any. Non-standard documentation will be considered upon its merits. (Optional)

Upload any additional documentation that supports the claim to special circumstances. (Optional)

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