



# LEED 2009 for Schools New Construction and Major Renovations

## EA CREDIT 1: OPTIMIZE ENERGY PERFORMANCE

All fields and uploads are required unless otherwise noted.

### ALL OPTIONS

This static sample form has been modified for offline access. All sections of the form are visible. Sample forms are for reference only.

The majority of requirements for EA Credit 1 are contained within documentation for EA Prerequisite 2. Summary data has been linked here for convenience and clarity.

Select a compliance path:

- ☐ **Option 1. Whole Building Energy Simulation.** The project team will document improvement in the proposed building performance rating as compared to the baseline building performance rating per ASHRAE/IESNA Standard 90.1-2007 or California Title 24-2005 Part 6.
- ☐ **Option 2. Prescriptive Compliance Path: ASHRAE Advanced Energy Design Guide.** The project team will document compliance with the ASHRAE Advanced Energy Design Guide for K-12 School Buildings 2008.
- ☐ **Option 3. Prescriptive Compliance Path: Advanced Buildings Core Performance Guide.** The project team will document compliance with the Advanced Buildings™ Core Performance™ Guide.

### OPTION 1. WHOLE BUILDING ENERGY SIMULATION

New construction percent:  %

EA Prerequisite 2 Energy Cost Summary: Total Building Energy Cost Performance (Table EAp2-12 or EAp2-13):

Percent energy cost savings:  %

EA Credit 1 Points Documented:

### OPTION 2. PRESCRIPTIVE PATH: ASHRAE Advanced Energy Design Guide for K-12

EA Prerequisite 2 Compliance Documented:

### OPTION 3. PRESCRIPTIVE COMPLIANCE PATH (CPG)

EA Prerequisite 2 Compliance Documented:

Gross Square Footage of the project building(s):

 sf

Principle Building Activity:

In addition to the point earned for compliance with the requirements of EA Prerequisite 2, Option 3: Core Performance Guide, up to two additional points are available to projects that implement performance strategies listed in Section Three: Enhanced Performance.

Select one of the following:

- ☐ The project team will pursue additional EA Credit 1 points by implementing performance strategies from Section Three: Enhanced Performance.
- ☐ No additional points will be pursued.

### CORE PERFORMANCE GUIDE SECTION 3: ENHANCED PERFORMANCE STRATEGIES

Select at least three of the following (note that a maximum of six strategies can contribute to points earned under EA Credit 1):

- ☐ Criteria 3.2: Daylighting and Controls
- ☐ Criteria 3.3: Additional Lighting Power Reductions
- ☐ Criteria 3.4: Plug Loads/Appliance Efficiency
- ☐ Criteria 3.5: Supply Air Temperature Reset (VAV)
- ☐ Criteria 3.6: Indirect Evaporative Cooling
- ☐ Criteria 3.7: Heat Recovery
- ☐ Criteria 3.9: Premium Economizer Performance
- ☐ Criteria 3.10: Variable Speed Control
- ☐ Criteria 3.11: Demand-Responsive Buildings (Peak Power Reduction)
- ☐ Criteria 3.12: On-Site Supply of Renewable Energy
- ☐ Criteria 3.14: Fault Detection Diagnostics

## CRITERIA 3.2: DAYLIGHTING AND CONTROLS

The following measures were implemented in the project design:

- ☐ Skylights installed over occupied spaces (all open areas & enclosed spaces larger than 1000 sf)
- ☐ Daylight controls reduce lighting levels by at least 50% in response to daylight
- ☐ Daylight glazing is designed to limit direct sunlight
- ☐ Daylight controls in toplight daylight zones
- ☐ Daylight controls in all side daylit zones
- ☐ Daylight controls will be calibrated

**Upload EAc1-1.** Provide representative cutsheets or other documentation indicating the daylight controls installed or specified in the project.

A floor plan or other representative drawings indicating daylit areas are required to document compliance with Criteria 3.2.

**Upload L-1.** Provide representative floor plans for the project building.

Select one of the following:

- ☐ The floor plan above shows daylit areas for the project building.
- ☐ A different document is better suited to satisfy this requirement.

**Upload EAc1-2.** Provide representative drawings indicating the daylit areas.

## CRITERIA 3.3: ADDITIONAL LIGHTING POWER REDUCTIONS

Based on calculations performed using the whole building or space-by-space method, the project building has documented a 40% reduction in connected lighting load (pursuant to the lighting power density reduction targets in CPG Criteria 3.3).

Signatory	
Initial here:	

**Upload EAc1-3.** Provide summary calculations confirming at least 40% reduction in connected lighting load for the project building.

## CRITERIA 3.4: PLUG LOADS/APPLIANCE EFFICIENCY

For all equipment types rated by ENERGY STAR, the project will purchase and install only ENERGY STAR qualified equipment.

SIGNATORY	
Initial here:	

Describe office equipment control strategies employed at the project building to reduce equipment run-time. Be sure to include details pertaining to computer monitors and computer power management settings:

Select one of the following:

- ☐ Commercial refrigeration and/or ice-making equipment will be installed in the project building or associated grounds.
- ☐ The project building will not include commercial refrigeration and/or ice-making equipment

**Upload EA1-4.** Provide cut sheets, summary calculations, or other documentation demonstrating that all commercial refrigeration and ice-making equipment is in compliance.

### CRITERIA 3.5: SUPPLY AIR TEMPERATURE RESET

Only buildings with mechanical conditioning, in part or whole, are eligible for Criteria 3.5.

- ☐ The project building is mechanically ventilated, in part or in whole.

The supply air temperature reset is in the specifications for the project building. The control is demand-based, and uses the warmest central supply air temperature setting that will satisfy all zones in cooling, to reduce the need for reheat.

Signatory	
Initial here:	

### CRITERIA 3.6: INDIRECT EVAPORATIVE COOLING

The following indirect evaporative cooling equipment type(s) are used in the project building: (Select all that apply)

- ☐ Indirect-only: traditional type
- ☐ Indirect-only: second type
- ☐ Hybrid: indirect/direct evaporative
- ☐ Hybrid: multi-stage built-up systems
- ☐ Hybrid: indirect/DX
- ☐ Other (describe below)

I have reviewed the information above and it is accurate to the best of my knowledge.

Signatory	
Initial here:	

Describe the evaporative cooling system type, manufacturer, model, and capacity.

CRITERIA 3.7: HEAT RECOVERY

Select all that apply to the project building: (Optional)

- ☐ The project building will be operated for extended hours
- ☐ The project building has a high outside air ventilation rate as a percentage of total air flow
- ☐ The project building is in a cold climate
- ☐ The project building has a high occupant density

Heat recovery system effectiveness:  %

*The energy heat recovery system should include latent heat recovery with an effectiveness of 70% or higher (heat-wheel type) unless the local or internal humidity control conditions preclude latent heat recovery.*

CRITERIA 3.9: PREMIUM ECONOMIZER PERFORMANCE

Only buildings with mechanical conditioning, in part or whole, are eligible for Criteria 3.9.

- ☐ The project building is mechanically ventilated, in part or in whole.

The economizer features are fully integrated with cooling controls to achieve the requirements in CPG Criteria 3.9.

Signatory

Initial here:

The following elements are designed and implemented in the economizer(s): (Select all that apply; at least 3 are required)

- ☐ Advanced documented checkout
- ☐ Minimum air flow.
- ☐ Primary control sensor placement
- ☐ Installer training
- ☐ Low ambient outside air compressor lockout
- ☐ Dedicated thermostat stage for the economizer
- ☐ Differential changeover with both a return and outside air sensor
- ☐ Dry-bulb changeover in drier western climates and the use of enthalpy sensors in more humid eastern regions

### CRITERIA 3.10: VARIABLE SPEED CONTROL

Only buildings with mechanical conditioning, in part or whole, are eligible for Criteria 3.10.

- ☐ The project building is mechanically ventilated, in part or in whole.

Complete Table EAc1-1 for all individual pumps serving variable flow systems and VAV fans having a motor horsepower of 5hp or larger.

**Table EAc1-1.** Variable Speed Control

*Note: Design wattage demand may be no greater than 30% to comply.*

Pump/fan type	Pump/fan location	System served	Design wattage demand of pump/fan motor at 50% of design flow (%)

### CRITERIA 3.11: DEMAND-RESPONSIVE BUILDINGS (PEAK POWER REDUCTION)

Indicate the strategies used to respond to the critical peak power signal:

- ☐ Mechanical equipment power demand is reduced
- ☐ Thermal energy storage
- ☐ Lighting equipment power demand is reduced without compromising critical illumination
- ☐ Other:

Complete Table EAc1-2 for all integrable loads that equipment replaces electricity.

**Table EAc1-2.** Utility Grid Demand Reduction

Strategy	Interruption	Contribution to total load reduction at peak demand (whole building) (%)
Total load reduction at peak demand (%) <i>Must be 10% or greater.</i>		

CRITERIA 3.12: ON-SITE SUPPLY OF RENEWABLE ENERGY

Describe the renewable energy system type.

Table EAc1-3. Median Electrical Intensity

Building Type	Default	Median Electrical Intensity (MEI) (kWh/sf)
	<input type="checkbox"/>	

List the CBECS source used for the non-default Median Energy Intensity value.

The majority of requirements for Core Performance Guide Criteria 3.12 are contained within documentation for EA Credit 2. The summary data (total renewable energy generated) has been linked here for convenience and clarity.

Total annual renewable energy generated (kWh):

Gross Square Footage of the project building(s):

sf

The building's annual electric energy use, based on the median electrical intensity:

kWh/yr

Percentage of on-site renewable energy:

Must be at least 5% to comply with Criteria 3.12

%

CRITERIA 3.14: FAULT DETECTION DIAGNOSTICS

Fault detection diagnostics (FDD) capabilities are incorporated in all manufactured rooftop HVAC equipment at the project building, and are capable of monitoring performance in the following categories:

- ☐ Refrigerant charge
- ☐ Airflow
- ☐ Economizer operation
- ☐ Cycling duration information
- ☐ Other:

ADDITIONAL DETAILS

- ☐ Special circumstances preclude documentation of credit compliance with the submittal requirements outlined in this form.

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.

**Upload EAc1-SC.** Provide any additional documentation that supports the claim to special circumstances. (Optional)

- ☐ The project team is using an alternative compliance approach in lieu of standard submittal paths.



# ALTERNATIVE COMPLIANCE PATH

Describe the alternative compliance path used by the project team. Include justification that this path meets the credit intent and requirements. Be sure to reference what additional documentation has been provided, if any. Non-standard documentation will be considered upon its merits.

**Upload EAc1-ACP.** Provide any additional documents that support the alternative compliance path approach. (Optional)

- ☐ The project team is using the above alternative compliance path to document exemplary performance of EAc1.

## SUMMARY

EA Credit 1: Optimize Energy Performance Points Documented:

EA Credit 1: Optimize Energy Performance Exemplary Performance Points Documented:

- ☐ The project team reserves one point in the Innovation in Design credit category for exemplary performance in EAc1.