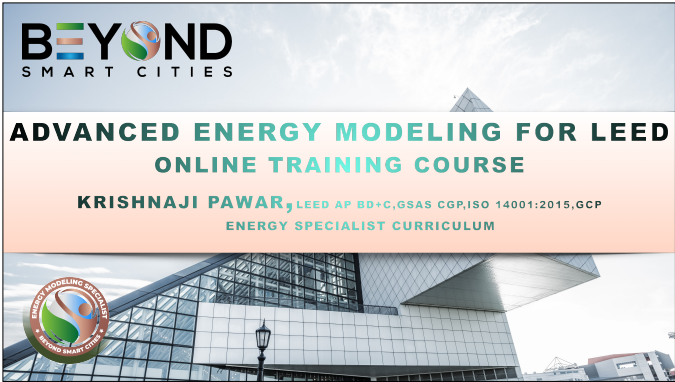




ADVANCED ENERGY MODELING FOR LEED ONLINE TRAINING COURSE

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ENERGY SPECIALIST CURRICULUM





RENEWABLE ENERGY FOR ENERGY PROFESSIONALS

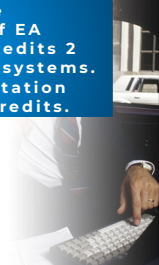
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WHAT SHOULD YOU LEARN



This chapter explains the synergies and overlaps of EA Prerequisite 2 with EA Credits 2 and 6 in the LEED rating systems. It also includes documentation guidance for these two credits.



EA CREDIT 2, RENEWABLE ENERGY

EA Credit 2 requires that projects use eligible on-site renewable energy systems to offset building energy cost by at least 1% to achieve the minimum threshold. When the performance compliance method (Option 1) is used for EA Prerequisite 2, the total energy consumption and cost reported in EA Prerequisite 2 is linked to the data listed in EA Credit 2.

The renewable energy generated on site can also offset total building energy use from traditional energy sources and help projects achieve higher performance ratings for EA Credit 1. Table 5.1 lists eligibility requirements for on-site renewable energy.



EA CREDIT 2, RENEWABLE ENERGY +

Table 5.1. Eligible and Ineligible Renewable Energy Systems

Table 5.1. Eligible and Ineligible Renewable Energy Systems

Eligible	Ineligible
<ol style="list-style-type: none">Electrical production systems based on<ul style="list-style-type: none">photovoltaic (pv)windhydroelectrictidal or wavebiofuels, including untreated wood waste, agricultural crops or waste, animal waste and other organic waste, and landfill gasSolar thermal systemsGeothermal systems that use deep-earth water or steam sources to produce electric power or thermal energy	<ol style="list-style-type: none">Architectural passive design strategies, such as shading and daylightingEarth-coupled HVAC systems that do not obtain significant quantities of deep-earth heat, such as ground-source heat pumpsBiofuels, including combustion of municipal solid waste, forestry biomass waste other than mill residual, wood coated with paints, plastics, or formica, and wood treated for preservation with some materials



EA CREDIT 2, RENEWABLE ENERGY +

- The renewable energy system is installed within the boundaries of the project or on the project site.
- The renewable energy system is connected immediately adjacent to the utility meter.
- If on-site renewable energy sources are owned and operated by an entity other than the building owner, a minimum 10-year contract for on-site generation is established with the owner of the energy system, and the energy system owner does not count the renewable energy certificates (RECs) associated with the renewable energy system to meet a mandated renewable portfolio standard goal, or the owner of the energy system provides the RECs to the project owner. The RECs associated with the renewable energy system are not sold.



CALCULATION METHODS

The percentage of renewable energy cost that is used to determine the points earned by a project is calculated with the following two equations:

$$\text{Renewable Energy Cost} = \text{On-Site Energy Generated} \times \text{Utility Rate (\$/unit)}$$

$$\text{Percentage Renewable Energy} = \frac{\text{Renewable Energy Cost}}{\text{Total Energy Cost}} \times 100$$

How total energy use is calculated depends on whether energy simulation is performed for EA Credit 1. Table 5.2 lists the ways to determine this figure.

CALCULATION METHODS FOR RENEWABLE ENERGY COST

The percentage of renewable energy cost that is used to determine the points earned by a project is calculated with the following two equations:

	Simulation performed for EA Credit 1	Simulation not performed for EA Credit 1
Energy generated	Estimate, using same simulation tool employed for EA Credit 1 or separate calculation.	Use separate calculation.
Utility rate	Use actual utility schedule or virtual utility rate.	Use "Commercial Sector Average Energy Cost by State" (EIA 2003).
Total energy cost	Use total design energy cost of proposed design before credit for renewable energy is taken.	Default: Total Energy Cost = Energy Intensity x Building Area x Utility Rate Energy intensities are median electricity and fuel consumption intensities, in kWh/sf and kBtu/sf, from CBECS database.

CBECS = Commercial Buildings Energy Consumption Survey
EIA = Energy Information Administration

COMMON ERRORS

- ❑ The total energy cost claimed does not match the figures from the EA Prerequisite 2 credit form or CBECS data.
- ❑ Electricity consumption is used instead of energy cost.
- ❑ The renewable energy source does not meet the credit requirements.
- ❑ The information provided to determine the renewable energy consumption and cost is insufficient.
- ❑ The renewable energy consumption and cost for weather-dependent systems are not based on hourly weather data.
- ❑ For renewable energy systems whose energy generation is limited to the loads of the building (such as solar energy with limited storage tank capacity), the renewable energy consumption and cost do not account for the building load profile data.