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LEED AP Building Design + Construction (LEED AP BD+C)

USGBC LEED-AP-BD+C

Version Demo

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QUESTION NO: 1

A design team plans to use daylight-responsive controls in open offices near perimeter glazing. During review, the electrical engineer proposes placing one photosensor at the center of the entire floor plate. Why is this approach unsuitable?

A. A single photosensor is prohibited whenever a floor has perimeter glazing

B. Daylight availability varies by location, so controls should respond to the daylight zone they serve

C. Photosensors should be placed at every workstation rather than in representative locations

D. Occupancy sensors can measure daylight levels more accurately than photosensors

ANSWER: B

Explanation:

Daylight availability varies by location, so controls should respond to the daylight zone they serve is correct. Daylight levels near glazing can differ substantially from those in interior areas because of distance from windows, orientation, shading, and room geometry. A single centrally located sensor may not represent conditions in the perimeter daylight zones and can cause inappropriate electric-light operation.

Photosensors do not need to be located at every workstation, but their location and control zoning must reflect the areas affected by daylight. Occupancy sensors address whether a space is occupied, not the amount of available daylight.

QUESTION NO: 2

A building owner is considering the installation of a solar thermal panel on the roof of the building. The initial cost of the system is higher than a conventional natural gas system. Which of the following is true to make the renewable energy option economically feasible?

A. Utility cost savings over the lifetime of the system must offset the higher initial cost

B. Higher initial cost must exceed the cost of the utility over the lifetime of the system

C. Higher initial cost must exceed the savings on the utility cost over the lifetime of the system

D. Utility cost savings over the lifetime of the system must be lower than the higher initial cost of the system

ANSWER: A

Explanation:

Utility cost savings over the lifetime of the system must offset the higher initial cost is correct because economic feasibility is evaluated by comparing the solar thermal system's additional upfront investment with the value of the energy-cost savings it produces over its useful life. Solar thermal equipment displaces natural-gas consumption, creating recurring utility savings. When those savings, evaluated over the analysis period, are sufficient to recover the higher initial investment, the owner can justify the renewable-energy alternative financially. In a rigorous life-cycle cost analysis, future savings are converted to present value using an appropriate discount rate, and the assessment may also include differences in maintenance, replacement, incentives, fuel-price escalation, and residual value. The central concept remains that the project must provide enough avoided utility expense to cover its incremental cost and achieve an acceptable financial return. This reflects the life-cycle-cost approach used for evaluating building energy measures rather than relying solely on first cost. The U.S. Department of Energy describes life-cycle cost analysis as considering the total costs associated with owning, operating, maintaining, and disposing of a building or system over a defined study period. See the U.S. Department of Energy's Life-Cycle Cost Analysis guidance and the NIST Building Life-Cycle Cost resources.