

*Learning to LEED: Day 2*  
*Energy & Atmosphere Quiz*

1. Number of Prerequisites in the Energy & Atmosphere category: \_\_\_\_\_  
Number of Credits in the Energy & Atmosphere category: \_\_\_\_\_  
Number of Points in the Energy & Atmosphere category: \_\_\_\_\_
  
2. Which three of the following activities in the commissioning process are only applicable to EAc3, Enhanced Commissioning? (Choose 3.)
  - a. Incorporate commissioning requirements into the construction documents
  - b. Prepare for a review of building operation within 10 months of substantial completion
  - c. Create a systems manual for future operating staff
  - d. Complete a summary commissioning report
  - e. Review the OPR and BOD for quality and completeness
  - f. Conduct a commissioning design review of the OPR and BOD prior to the mid-construction documents phase
  
3. Which three of the following credits and prerequisites from the Energy & Atmosphere category can only be submitted during the construction phase? (Choose 3.)
  - a. EAc6, Green Power
  - b. EAp1, Fundamental Commissioning of the Building Energy Systems
  - c. EAc5, Measurement & Verification
  - d. EAc1, Optimize Energy Performance
  - e. EAp3, Minimize Energy Performance
  - f. EAc2, On-Site Renewable Energy
  
4. EAc4, Enhanced Refrigerant Management, sets a maximum threshold for what environmental impact of the built environment? (Choose 1.)
  - a. Chlorofluorocarbons
  - b. Ozone depletion
  - c. Global warming potential
  - d. The combination of ozone depletion and global warming potential
  - e. The combination of chlorofluorocarbons and ozone depletion
  
5. Which of the following standards describes the structure of a measurement and verification plan? (Choose 1.)
  - a. Center for Resource Solutions' Green-e Product Certification Requirements
  - b. IPMVP Volume III: Concepts and Options for Determining Energy Savings in New Construction
  - c. The Energy Policy Act of 1992
  - d. CIBSE Applications Manual 10

6. Which three of the following are considered on-site renewable energy systems for the purposes of EA Credit 2, On-Site Renewable Energy? (Choose 3.)
- Wave and tidal power systems
  - Renewable energy credits
  - Photovoltaic systems
  - Geothermal heating systems
  - Ground source heat pumps
  - Passive solar features
7. The design team for a 15,000-sq.ft. office building does not have sufficient funds to complete the energy simulation process, but still hopes to receive points under EAc1, Optimize Energy Performance. Following a compliance path under which standard would maximize the amount of points they could achieve? (Choose 1.)
- Advanced Buildings Benchmark™ Version 1.1
  - ASHRAE 90.1-2004, Energy Standard for Buildings Except Low-Rise Residential
  - ASHRAE Advanced Energy Design Guide for Small Office Buildings, 2004
  - The Carbon Trust Good Practice Guide 237
8. How many points might a project earn for producing 11% of its total building energy cost with renewable energy systems? (Choose 1.)
- 0
  - 1
  - 2
  - 3
  - 4
9. Buildings consume approximately how much of the energy produced in the U.S. each year? \_\_\_\_\_%
10. The CEO of a successful recording label is committed to reducing the environmental impact of a studio project both by reducing the amount of energy used in the building, and by making sure that the energy used comes from more benign sources. The structure, which will be a major renovation of an old theater, uses green noise barriers with low-VOC adhesives. Additionally, it obtains 15% of its energy by cost from a roof-based photovoltaic system while improving the baseline energy performance by twice that. The CEO also opts to purchase green power for 35% of the building's energy use for four years after its construction.

Which points could this recording studio achieve for its energy innovations under these specifications? (Choose 4.)

- (1) for EAp2, Minimum Energy Performance
- (1) for EAc2, On-Site Renewable Energy
- (1) for EAc6, Green Power
- (1) for IDc1, Innovation in Design
- (3) for EAc2, On-Site Renewable Energy
- (3) for EAc6, Green Power
- (6) for EAc1, Optimize Energy Performance
- (8) for EAc1, Optimize Energy Performance

11. Identify whether each of the following terms or descriptions refers to A) Renewable Energy or B) Green Power:
- a. \_\_\_\_\_ Renewable Energy Certificates
  - b. \_\_\_\_\_ Building Integrated Photovoltaics
  - c. \_\_\_\_\_ On-site biofuel electricity generation
  - d. \_\_\_\_\_ ASHRAE 90.1-2004
  - e. \_\_\_\_\_ Green-e
  - f. \_\_\_\_\_ Illuminating Engineering Society of North America
  - g. \_\_\_\_\_ DOE Commercial Buildings Energy Consumption Survey
  - h. \_\_\_\_\_ Closed electrical market
12. Which two of the following requirements refers to EAp3, Fundamental Refrigerant Management? (Choose 2.)
- a. Zero use of CFC-based refrigerants in new base building HVAC&R systems.
  - b. Select refrigerants with minimal contributions to ozone depletion and global warming potential.
  - c. Zero use of CFCs, HCFCs, or Halons in fire suppression systems.
  - d. Phase CFCs out of existing HVAC equipment before project completion.
13. The prescriptive compliance paths for EAc1, Optimize Energy Performance, provide points to building projects that, instead of performing whole building energy simulations, follow certain criteria established for the regional \_\_\_\_\_ zones in which they were located.
14. EAc1, Optimize Energy Performance, refers to which of the following methods to determine the increased efficiency of a building project over the baseline? (Choose 1.)
- a. Performance Rating Method
  - b. Energy Cost Budget Method
  - c. Energy Conservation Measure
  - d. Advanced Energy Design Guide
15. Which of the following counts as process energy for the purposes of EAc1, Optimize Energy Performance? (Choose 3.)
- a. Space heating
  - b. Elevators and escalators
  - c. Office equipment
  - d. Parking garage lighting
  - e. Kitchen hood exhaust
  - f. Refrigeration
16. Passive solar strategies may apply to EAc2, On-Site Renewable Energies. ( T / F )

17. Commissioning activities should, at a minimum, be completed for which of the following systems in order to fulfill EAp1, Fundamental Commissioning of the Building Energy Systems? (Choose 4.)
- a. Renewable energy systems
  - b. Lighting and daylighting controls
  - c. Building envelope
  - d. Domestic hot water systems
  - e. HVAC&R systems
  - f. CO2 monitoring controls
18. What information must be submitted on LEED-Online in order to achieve EAc5, Measurement & Verification? (Choose 2.)
- a. Listing of installed metering devices
  - b. A copy of the M&V Plan
  - c. Commissioning information for metering devices
  - d. The chosen compliance path
19. What is the minimum duration of the post-construction occupancy measurement and verification period required in order to achieve 1 point for EAc5? (Choose 1.)
- a. 3 mos.
  - b. 6 mos.
  - c. 1 year
  - d. 2 years
20. How many energy simulation runs are required to establish the Baseline Design for a project attempting to achieve EAc1, Optimize Energy Performance? (Choose 1.)
- a. 2
  - b. 4
  - c. 6
  - d. 8

Simply put, how do these simulations vary from each other? (Two words.)

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**Answers**

1. 3; 6; 17
2. b, c, f
3. a, b, c
4. d
5. b
6. a, c, d
7. c
8. c
9. 37%
10. c, d, e, h
11. B; A; A; A; B; A; B; B
12. a, d
13. Climate
14. a
15. b, c, f
16. False
17. a, b, d, e
18. b, d
19. c
20. b; Solar orientation