

NRGY 235: Building Energy Efficiency

Week 4 Quiz



1. Which of the following is the most appropriate definition of “Incremental Cost”?
 - a) The cost of each additional inch of insulation added to an attic when several inches in total are added
 - b) The highest cost among a group of options
 - c) The cost per unit of any quantity of materials or equipment that is installed
 - d) The difference in cost between two options
2. What is a “Baseline” in the context of Energy Conservation Measures?
 - a) The cheapest option among several options
 - b) It is the defined set of options against which other options are compared, and the baseline definition depends upon many aspects of the scenario including the goals of stakeholders; a baseline can be better than the code minimum
 - c) It is the scenario that most closely reflects the average scenario in a region: e.g. a baseline home size in Missoula, MT would be the size that is equal to the average home size in Missoula
 - d) The minimum that is required by a building or energy code
3. Which of the following statements about the difference between an Energy Conservation Measure (ECM) and a Facility Improvement Measure (FIM) is most correct?
 - a) ECMs focus on HVAC equipment, while FIMs focus on improving the building envelope
 - b) ECMs generally focus on energy savings, while FIMs can include improvements that result in operations and maintenance savings without energy savings
 - c) FIMs do not account for the total difference in energy consumption between the base and proposed cases, but ECMs do
 - d) ECMs generally include electrical energy savings only, not natural gas savings, while FIMs include both
4. Consider FIM of adding insulation to a building foundation. Which of the following statements is most true?

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- a) This FIM is best proposed at the design phase of a new construction project, as opposed to a proposal for retrofits to an existing building
 - b) The FIM typically has a very short payback period when applied to existing buildings
 - c) This FIM may result in improvements in occupant comfort, but will not likely save significantly on cost
 - d) This FIM is rarely cost effective
5. Incremental Savings reported in an Energy Audit Report are generally calculated as which?
- a) Proposed case annual energy consumption minus base case annual energy consumption
 - b) Base case monthly energy consumption minus proposed case daily energy consumption
 - c) Proposed case EUI minus Base Case EUI
 - d) Proposed case annual energy consumption divided by base case annual energy consumption
6. Which among the following statements is most true?
- a) Though it is a good idea to show your work when presenting energy savings calculations results, it is not advisable to show your work on cost estimates as then the customer will know exactly what your markup is
 - b) Permitting fees can generally be ignored in cost estimates for ECMs/FIMs
 - c) When researching utility incentives for ECMs/FIMs, it is necessary to first establish the boundaries of the nearby utility companies, as it is not uncommon to have more than one utility serving within a region such as a single county
 - d) It generally takes more effort to pursue utility rebates than they are worth, and therefore you can better serve your client by focusing on Federal Tax Rebates
7. If an Energy Conservation Measure (ECM) has a simple Return on Investment (ROI) = 0.10 = 10%, what is the Simple Payback Period (SPB)?
- a) 3 years

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- b) 25%
 - c) These two quantities are not related
 - d) 10 years
8. Which of the following would NOT be considered to be an “Energy Model”?
- a) A single equation such as: $Q = A * U * (T2 - T1)$, along with the known or assumed values of the parameters A, U, T1, and T2
 - b) A spreadsheet “Bin Model”
 - c) A comparison of actual energy utility billing between two consecutive years
 - d) Software energy modeling tools that are approved by the DOE or EPA such as eQuest or REM/Rate
9. Which of the following statements about Energy Modeling is most correct?
- a) The quality of an energy model’s outputs depends largely on the abilities and knowledge of the user the accuracy of the model output even for a calibrated model is largely dependent on the accuracy and quality of the inputs entered into the model
 - b) It is always better to use a widely approved software tool such as eQuest or REM/Rate rather than to create your own modeling tool using spreadsheets
 - c) Energy models are useful for evaluating options for new construction projects, but on existing buildings it is always better to avoid using models and base decisions solely on historical energy billing data
 - d) Energy models are never accurate enough to use as the basis for important decision about improvementst aht carry significant costs, and thus they should only be used to benchmark a building’s energy consumption relative to other similar buildings
10. Which of the following statements about Energy Modeling software tools is most correct?
- a) There are very few energy modeling software tools

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- available that are free of cost, and among the few that are, they do not provide quality results and should be avoided
- b) Spreadsheet models are always better to use than “black box” software modeling tools because spreadsheet models are more transparent
 - c) The quality/accuracy of the modeling tool output is directly related to the quality/accuracy of the inputs, and as much as possible, modeling results should be cross-checked against actual measurements, alternative method calculations or other modeling tools.
 - d) Among the top widely approved software tools for energy modeling, if you run several modeling tools with the same inputs, you can expect to get approximately the same results from all models