



SERVICE PROVIDER GUIDE

Guidelines for Selecting an Energy Analyst

Intent

This guide will help you learn more about what energy analysis is and help ensure you select a qualified analyst that will compliment the project team.

Background

Energy analysis in its broadest definition helps evaluate the energy performance of buildings and equipment through both direct metering/measurement (also called monitoring and verification) and computer simulation. Energy analysis encompasses daylighting analysis and commissioning, and guidelines covering these two topics have been prepared separately.

Within the LEED™ framework, energy analysis typically incorporates the following elements:

- ❖ Modeling for optimizing/predicting:
 - energy performance including HVAC, lighting, water, daylighting and building envelop analysis
 - thermal performance
 - ventilation effectiveness
 - occupant comfort
 - life cycle cost analysis
- ❖ Metering and energy analysis for ongoing monitoring and verification of building systems.
- ❖ Calculations related to water efficiency and indoor environmental quality.

Other related areas of energy analysis/modeling include:

- ❖ Modeling of urban heat islands
- ❖ Urban air shed modeling

The majority of energy analysis in the LEED™ program centers around completing a “building energy simulation model.” This refers to a commercially available software program that performs hour-by-hour simulation of a building. It incorporates all building envelope, building systems, schedules, utility rate, cost, and weather data. A building simulation model is required work to earn 14 of the 69 LEED™ points. A computer model helps architects and engineers find the best combination of material and systems for a given set of project specific goals. A computer model does not necessarily guarantee to an energy efficient building. It is a prospecting tool, that in the hands of a dedicated/experienced user, can indicate which combination of building strategies is most likely to produce a building that is energy-efficient, has the desired thermal performance and is a comfortable and healthy environment in which to live and/or work. A properly constructed model will allow the design team to vary several different aspects of the construction and evaluate the impact these changes would have on the economic and environmental bottom line.

Firms specializing in mechanical engineering, electrical (lighting/daylighting) engineering, commissioning, or energy management are good places to start when looking for a qualified energy analyst. A firm dedicated to energy analysis may have more depth of knowledge and experience in evaluating a wider range of project energy issues.

Questions to Ask

When selecting an energy analyst, review the general guidelines for selecting a green design professional. Then review the 10 questions specific to energy analysis below. This guide will help you complete a more thorough selection process.

Q1: What hourly energy analysis programs is the firm experienced in using?

Typical hourly energy simulation programs currently in vogue are DOE-2, Trane Trace 700 and Carrier E-20). There is a myriad of other commercially available programs. Consult http://www.eere.energy.gov/buildings/tools_directory/ for a list of the more common programs available and in use today. As a minimum, the firm should be experienced in applying the Energy Cost Budget Method, LEED™ Energy Modeling Protocol, IPMVP to building energy analysis projects.

Q2: What energy analysis spreadsheets does the company use?

For some needs, detailed building hourly simulation is overkill or not required to obtain the LEED™ credit. Often firms have developed their own proprietary spreadsheets such as utility bill evaluation, energy savings calculations using direct metered data, regression analysis, etc. Ask to see a sample or two and be sure to verify that these spreadsheets conform to requirements of the IPMVP.

Q3: What is the firm's experience in life cycle cost analysis?

The firm should demonstrate previous experience in LCCA for the types of design alternatives that are part of your project.

Q4: How does the firm insure the use of accurate life cycle cost information?

A combination of in-house energy expertise, discussion with other project team members, cost estimating manuals, information from installation and service contractors and equipment manufacturer should be used to complete the LCCA.

Q5: If metering equipment is to be used, what equipment does the firm use for direct measurements/metering and what is the firm's experience in monitoring building energy performance?

Get a list of the equipment owned by the company and equipment that is typically rented. Your company may have preferences to type of equipment used. Equipment rental is usually a small part of the total project cost but will cost more than if the company owns the equipment. Monitoring building energy performance can involve a combination of engineering calculations using metered data, utility bill tracking software, regression analysis and building calibration using hourly computer simulation programs.

Q6: If metering/measuring equipment will be used, is the equipment owned by the company or will the equipment be rented for the project?

Get a list of the equipment owned by the company and equipment that is typically rented. Equipment rental is usually a small part of the total project cost but will cost more than if the company owns the equipment.

Q7: What type of experience does the company have with utility bill tracking/ analysis and establishing building baselines (building calibration)?

Knowledge of utility rate structures is key in energy analysis work. There are almost as many rate structures as hours in a day and knowledge of these shows experience. Knowledge of effective energy conservation measures and the performance contracting process is important. It may be a benefit for the firm to have knowledge/experience with the following commercially available tools to analyze, track and monitor utility bills and costs if these are a part of the project: Faser, Energy WatchDog, MarketManager, Metrix, Energy Star Benchmarking Tool.

Q8: Who will be the person(s) performing the energy analysis?

Ask to get the personal resume for all people who will be involved in the energy analysis as well as description of each person's core skills and value added to the energy analysis effort. Meet these people if you will have direct communications with them during the project implementation process.

Q9: What is the firm's project management approach (to insure quality of energy analysis)?

Be sure you are comfortable with the process used by the firm to ensure quality services and manage risk.

Q10: Why should you hire this firm to do your project?

Have them give you their reasons for why they think you should hire them. This will let you know if they understand the needs of your project and how their experience meets those needs. Answering this question may bring to light additional direct and indirect benefits they will bring to the project and help make the final decision.