

Competition Guidelines

Introduction

The competition is based on a real life professional scenario where a consultant is hired to perform a preliminary energy analysis of a school. A school building in Manhattan will be used as the case study, and the winning submittal will be given to the school board. There will also be a cash prize of \$1000 to the top professional team and \$500 to the top student team.

Summary:

With all the buzz about energy efficiency in the air, and after paying their most recent winter utility bill, the school board has hired you as an energy consultant. Your objective is to perform a preliminary energy analysis, taking advantage of building simulation and other industry tools to evaluate the performance of the school building, and to recommend a course of action to the school board. The school's facility manager will be providing you with the information you need to perform the analysis. Good luck!

Objectives/Scope of Work:

The work you have been contracted to do can be divided into the following four categories.

- 1) **Data Collection:** The facility manager spent two days sorting through available drawings and inspecting the building. He has come up with a package of materials including all the information he assumes you will need to perform your analysis. The package includes, among other things, the building floor plan, a description of systems with key data points, and the utility bills for the past year. You will need to carefully sort through this data and provide a written request for any additional information you will need during your analysis. The facility manager has scheduled another inspection of the building for the beginning of May. He has requested that you email him your list of questions and requests for clarification to modelingcomp@ibpsanyc.com by May 1st. Note that he has limited tools and expertise, as well as a limited number of hours he is able to spend on this project.
- 2) **Energy Analysis:** One parent on the school board works in the field of building energy efficiency, and helped the board formulate their technical requirements. You are being asked to put together a preliminary energy model, taking advantage of the available data, including utility bills, and using available resources and your professional judgment to fill in any gaps. The knowledgeable parent also mentioned valuable resources he had heard are available on the Energy Star website, and urges you to look into it.
- 3) **Recommendations:** Based on the results of your analysis, you are asked to put together a set of recommendations for the school board. Recommendations could include additional analysis, low to no-cost improvements, or capital improvement, including any state or federal programs the building may be eligible to participate in to receive public funding or access to technical resources. Keep in mind any investments must be justified to the school board and eventually to the public.

- 4) **Reporting:** Finally, you must compile the results of your analysis and your recommendations into a readable report for the school board, keeping in mind the target audience (school board, knowledgeable parent, future consultants or engineers). The report must be understandable to a non-technical audience, but still have enough detail & technical merit that it would be of value to future consultants or engineers. Technical material can be separated by including it in an appendix at the end of the report (as appropriate). Additional requirements for this submittal are outlined in the Submittal Requirements section below.

Timeline:

1. March 29th - Competition begins and all materials released
2. ~~May 1st~~ May 15th (extension!) - Request for clarifications and questions due to modelingcomp@ibpsanyc.com
3. ~~May 10th~~ May 25th (extension!) – Responses to questions and request for clarifications will be posted on the competition website:
<http://ibpsa.us/simbuild2010/competition.html>
4. July 1st – Final report is due to modelingcomp@ibpsanyc.com
5. August 8th-10th – Winning submittals will be presented at the conference and announced to conference attendees at the banquet

Submittal Requirements:

Maximum Length: 15 pages

Format: PDF or Microsoft Word (.doc or .docx)

A complete submission will consist of the following:

- 1) Energy Analysis Report
The report should follow the following format:
 - a. **Executive Summary:** Include a brief description of your team, the project, the existing conditions of the building, your analysis approach, and a brief summary of any finding/results.
 - b. **Analysis Approach:** Describe your analysis in greater detail. Include any software/internet tools utilized. Include a description of challenges and limitations of the analysis, including limited availability of data, human factor, and its preliminary nature. Describe major assumptions used in the analysis and their potential impact on the results.
 - c. **Summary of Results:** Present the results of your analysis.
 - d. **Recommendations:** Describe your recommendations to the board. Draw on the results of your analysis and available resources when coming up with your recommendations. Proposed improvements should include basic economic analysis (e.g. life cycle cost, payback). . Recommendations may also include further analysis or participation in energy efficiency programs.

- e. **References:** Cite any sources used.
- f. **Appendix:** Present detailed assumptions and technical material not appropriate for the body of the report.

Participants are also asked to submit any energy model files used in the analysis along with key output reports combined into a zip file.

If, for some reason, participants would like to organize their report differently than what is described above, they are free to do so.

Criteria:

Winners will be selected based on the following criteria:

1. Identification of relevant information - specifically, quality of the questions participants ask, their relevance to the energy analysis, appropriateness for its preliminary nature, prioritization, etc
2. Best use of available data, tools, and resources
3. Technical quality of analysis - knowledge of tool(s) used, quality of assumptions used in analysis, appropriateness of techniques utilized
4. Report - quality of final submittal judged for clarity, completeness, organization, etc
5. Recommendations - measures, further analysis, incentive opportunities etc

Potential Resources:

- ASHRAE Advanced Design Guides: <http://www.ashrae.org/publications/page/1604>
- EPA, ENERGY STAR for K-12 School Districts: http://www.energystar.gov/index.cfm?c=k12_schools.bus_schoolsk12
- ASHRAE 90.1-2007, Energy Standard for Buildings Except Low-Rise Residential Buildings (Free preview available at http://openpub.realread.com/rrserver/browser?title=/ASHRAE_1/ashrae_90_1_2007_I_P_1280)
- ASHRAE 90.1-2007 User's Manual
- NYSERDA, Energy Smart Schools Program: <http://www.nyserda.org/programs/schools/default.asp>
- DOE 2 website (www.doe2.com)
- eQUEST Users List (<http://lists.onebuilding.org/listinfo.cgi/equest-users-onebuilding.org>)