| v1 - LEED 1.0 pilot

Optimize energy performance

EAc1 | Possible 10 points

Glossary

Intent

Achieve increasing levels of energy performance above the baseline in the prerequisite standard to reduce environmental and economic impacts associated with excessive energy use.

Requirements

For Non-Food Service/Grocery Retail

Non-food service/grocery projects are those that do not include a commercial kitchen.

Projects are required to achieve two (2) Optimize Energy Performance points. Project teams are awarded these two points towards LEED certification but documentation that verifies compliance with two (2) Optimize Energy Performance points is mandatory for a project to be awarded LEED certification.

Option 1 – Whole building energy simulations (1-10 Points)

Reduce the proposed building performance rating compared to the baseline building performance rating per ASHRAE/IESNA Standard 90.1-2004 (without amendments), for the total energy consumption within and associated with the building project, as demonstrated by a whole building project simulation using the Building Performance Rating Method in Appendix G of the Standard.

All building energy loads associated with the project must be included in the energy simulation model. Improvements to non-regulated loads must be documented as described below. Regulated energy systems include HVAC (heating, cooling, fans, and pumps), service water heating, and general interior lighting. Process loads for non-food service/grocery retail may include display lighting, clothes washing, and other major support appliances. Merchandise for sale that is plugged in, and small moveable appliances are not candidates for improved energy performance.

Appendix G of Standard 90.1-2004 requires that the energy analysis done for the Building Performance Rating Method include ALL of the energy consumption within and associated with the building project.

To achieve points using this credit, the proposed design:

- Must comply with the mandatory provisions (Sections 5.4, 6.4, 7.4, 8.4, 9.4, and 10.4) in Standard 90.1-2004 (without amendments);
- Must include all the energy consumption within and associated with the building project; and
- Must be compared against a baseline building that both complies with Appendix G to Standard 90.1-2004 (without amendments).

For the purpose of this analysis, process energy for non-food service/grocery retail is considered to include, but is not limited to, office and general miscellaneous equipment, computers, elevators and escalators, laundry washing and drying, lighting exempt from the lighting power allowance (e.g. lighting integral to medical equipment) and other (e.g. waterfall pumps). Process energy does not include any lighting (such as for the interior, parking garage, surface parking, façade, or building grounds, except as noted above), nor any HVAC (such as for space heating, space cooling, fans, pumps, toilet exhaust, parking garage ventilation, kitchen hood exhaust, etc.), nor any service water heating for domestic or space heating purposes.

For Process Loads provide cut sheets or other documentation demonstrating budget and proposed equipment. A clear baseline must be described and documented to compare to proposed improvements in process load categories. The baseline and design cases must be documented in the following ways:

- Appliances & Equipment: For appliances and equipment, provide cut sheets of typical budget and proposed equipment that indicates hourly energy use. Provide a spreadsheet calculation estimating the daily use hours for each piece of equipment listed. Use the total estimated energy use in the energy simulation model as a plug load. Reduced use time (schedule change) is not a category of energy improvement in this credit. Energy star ratings and evaluations are a valid basis for performing this calculation.
- Display Lighting: For display lighting, the space by space method of determining allowed lighting power under ASHRAE 90.1-2004 must be used to determine the appropriate baseline for both the general building space and the display lighting. Section 9.3.1.2 of ASHRAE 90.1-2001 describes the methodology for determining a baseline that includes display lighting. Installed lighting in the proposed building, including display lighting is compared to this baseline in the simulation.

Option 2 – Prescriptive compliance path (2 Points)

Comply with the prescriptive measures of ASHRAE Advanced Energy Design Guide for Small Retail Buildings 2004. The following restrictions apply:

- Buildings must be under 20,000 square feet
- Buildings must be retail occupancy
- Projects must fully comply with all applicable criteria as established in the Advanced Energy Design

Guide for the climate zone in which the building is located.

For food service/grocery retail

Food service/grocery projects are those that include a commercial kitchen

Projects are required to achieve two (2) Optimize Energy Performance points. Project teams are awarded these two points towards LEED certification but documentation that verifies compliance with two (2) Optimize Energy Performance points is mandatory for a project to be awarded LEED certification.

Option 1 – Whole building energy simulation (1-10 Points)

Reduce the proposed building performance rating compared to the baseline building performance rating per ASHRAE/IESNA Standard 90.1-2004 (without amendments), for the total energy consumption within and associated with the building project, as demonstrated by a whole building project simulation using the Building Performance Rating Method in Appendix G of the Standard.

All building energy loads associated with the project must be included in the energy simulation model. Improvements to non-regulated loads must be documented as described below. Regulated energy systems include HVAC (heating, cooling, fans, and pumps), service water heating, and general interior lighting. Process loads for retail may include display lighting, refrigeration equipment, cooking and food preparation, and other major support appliances.
Merchandise for sale that is plugged in, and small moveable appliances are not candidates for improved energy performance.

Appendix G of Standard 90.1-2004 requires that the energy analysis done for the Building Performance Rating Method include ALL of the energy consumption within and associated with the building project.

To achieve points using this credit, the proposed design:

- Must comply with the mandatory provisions (Sections 5.4, 6.4, 7.4, 8.4, 9.4, and 10.4) in Standard 90.1-2004 (without amendments);
- Must include all the energy consumption within and associated with the building project; and
- Must be compared against a baseline building that both complies with Appendix G to Standard 90.1-2004 (without amendments).

For the purpose of this analysis, process energy is considered to include, but is not limited to, office and general miscellaneous equipment, computers, elevators and escalators, kitchen cooking and refrigeration, laundry washing and drying, lighting exempt from the lighting power allowance (e.g. lighting integral to medical equipment) and other (e.g. waterfall pumps). Process energy does not include any lighting (such as for the interior, parking garage, surface parking, façade, or building grounds, except as noted above), nor any HVAC (such as for space heating, space cooling, fans, pumps, toilet exhaust, parking garage ventilation, kitchen hood exhaust, etc.), nor any service water heating for domestic or space heating purposes.

For Process Loads provide cut sheets or other documentation demonstrating budget and proposed equipment. A clear baseline must be described and documented to compare to proposed improvements in process load categories. The baseline and design must be documented in the following ways:

- Appliances & Equipment: For appliances and equipment, provide cut sheets of typical budget and proposed equipment that indicates hourly energy use. Provide a spreadsheet calculation estimating the daily use hours for each piece of equipment listed. Use the total estimated energy use in the energy simulation model as a plug load. Reduced use time (schedule change) is not a category of energy improvement in this credit. Energy star ratings and evaluations are a valid basis for performing this calculation.
- Spreadsheet calculation may also be utilized for calculation of commercial appliances,and input into the ECB, in lieu of energy simulation modeling as a plug load.
- Display Lighting: For display lighting, the space by space method of determining allowed lighting power under ASHRAE 90.1-2004 must be used to determine the appropriate baseline for both the general building space and the display lighting. Section 9.3.1.2 of ASHRAE 90.1-2001 describes the methodology for determining a baseline that includes display lighting. Installed lighting in the proposed building, including display lighting is compared to this baseline in the simulation.
- Refrigeration: For hard-wired refrigeration loads, the impact of energy performance improvements must be modeled with a simulation program specifically designed to account for refrigeration equipment. For example, eQUEST has a refrigeration module that can be used to simulate performance improvements in refrigeration equipment.

For components that cannot be modeled by the simulation program, such as commercial kitchen ventilation (CKV), commercial cooking appliances, etc., exceptional calculation methods may be used. Consideration for approval of the exceptional calculation methods shall include documentation of the calculations performed and theoretical and/or empirical information supporting the accuracy of the method.

In order to establish the baseline and design criteria for the Energy Cost Budget Table 1 through Table 4 shall be utilized.
To help calculate energy usage of commercial cooking and kitchen appliances for both the baseline and design cases in order to input into the Energy Cost Budget projects may utilize the spreadsheet calculators provided by Energy Star for Commercial Food Service Equipment at:
http://www.energystar.gov/ia/products/commercial_food_service/CFS_QSR.xls and
http://www.energystar.gov/ia/products/commercial_food_service/CFS_Full_S…
For facilitating calculations related to the energy impact of introducing outside air to commercial kitchens, an outdoor air load calculation tool may be downloaded from http://www.archenergy.com/oac/. The outside air calculator can assist the in determining the best strategy for introducing make up air into the kitchen with or without having to charge the energy to the commercial kitchen ventilation system, depending on the path chosen for the outside air.

OR

Option 2 – Prescriptive compliance path (4 Points)

Comply with the prescriptive measures of ASHRAE Advanced Energy Design Guide for Small Retail Buildings 2004. The following restrictions apply:

- Buildings must be under 20,000 square feet.
- Buildings must be retail occupancy.
- Projects must fully comply with all applicable criteria as established in the Advanced Energy Design Guide for the climate zone in which the building is located.
- Projects must comply with the prescriptive measures on Table 1 through Table 4 for all applicable process loads.

OR

Option 3 – Prescriptive compliance path (4 Points)

Comply with the Basic Criteria and Prescriptive Measures of the Advanced Buildings Benchmark TM Version 1.1 with the exception of the following sections: 1.7 Monitoring and Trend-logging, 1.11 Indoor Air Quality, and 1.14 Networked Computer Monitor Control. (2 points) The following restrictions apply:

- Project teams must fully comply with all applicable criteria as established in the Advances buildings Benchmark for the climate zone in which the building is located.
- Projects must comply with the prescriptive measures on Table 1 through Table 4 for all applicable process loads.