EA PREREQUISITE: MINIMUM ENERGY PERFORMANCE
Required

BD&C
This prerequisite applies to

- New Construction
- Core & Shell
- Schools
- Retail
- Data Centers
- Warehouses & Distribution Centers
- Hospitality
- Healthcare

Intent

To reduce the environmental and economic harms of excessive energy use by achieving a minimum level of energy efficiency for the building and its systems.

Requirements

NC, CS, SCHOOLS, RETAIL, WAREHOUSES & DISTRIBUTION CENTERS, HOSPITALITY, HEALTHCARE

Option 1. Whole-Building Energy Simulation
Demonstrate an improvement of 5% for new construction, 3% for major renovations, or 2% for core and shell projects in the proposed building performance rating compared with the baseline building performance rating. Calculate the baseline building performance according to ANSI/ASHRAE/IESNA Standard 90.1–2010, Appendix G, with errata (or a USGBC-approved equivalent standard for projects outside the United States), using a simulation model.

Projects must meet the minimum percentage savings before taking credit for renewable energy systems.

The proposed design must meet the following criteria:

- compliance with the mandatory provisions of ANSI/ASHRAE/IESNA Standard 90.1–2010, with errata (or a USGBC-approved equivalent standard for projects outside the United States);
- inclusion of all energy consumption and costs within and associated with the building project; and
- comparison against a baseline building that complies with Standard 90.1–2010, Appendix G, with errata (or a USGBC-approved equivalent standard for projects outside the United States).

Document the energy modeling input assumptions for unregulated loads. Unregulated loads should be modeled accurately to reflect the actual expected energy consumption of the building.

If unregulated loads are not identical for both the baseline and the proposed building performance rating, follow the exceptional calculation method (ANSI/ASHRAE/IESNA Standard 90.1–2010, G2.5) or use the COMNET Modeling Guidelines and Procedures to document measures that reduce unregulated loads.

Projects that are connected to district energy systems (DES) must follow LEED's DES requirements and modeling guidelines.

Retail only

For Option 1, Whole-Building Energy Simulation, process loads for retail may include refrigeration equipment, cooking and food preparation, clothes washing, and other major support appliances. Many of

the industry standard baseline conditions for commercial kitchen equipment and refrigeration are defined in Appendix 3, Tables 1–4. No additional documentation is necessary to substantiate these predefined baseline systems as industry standard.

OR

Option 2. Prescriptive Compliance: ASHRAE 50% Advanced Energy Design Guide

Comply with the mandatory and prescriptive provisions of ANSI/ASHRAE/IESNA Standard 90.1–2010, with errata (or a USGBC-approved equivalent standard for projects outside the United States).

Comply with the HVAC and service water heating requirements, including equipment efficiency, economizers, ventilation, and ducts and dampers, in Chapter 4, Design Strategies and Recommendations by Climate Zone, for the appropriate ASHRAE 50% Advanced Energy Design Guide and climate zone:

- ASHRAE 50% Advanced Energy Design Guide for Small to Medium Office Buildings, for office buildings smaller than 100,000 square feet (10 000 square meters);
- ASHRAE 50% Advanced Energy Design Guide for Medium to Large Box Retail Buildings, for retail buildings with 20,000 to 100,000 square feet (2 000 to 10 000 square meters);
- ASHRAE 50% Advanced Energy Design Guide for K–12 School Buildings; or
- ASHRAE 50% Advanced Energy Design Guide for Large Hospitals.
- Over 100,000 square feet (10 000 square meters)

For projects outside the United States, consult ASHRAE/ASHRAE/IESNA Standard 90.1–2010, Appendixes B and D, to determine the appropriate climate zone.

OPTION 3. Prescriptive Compliance: Advanced Buildings™ Core Performance™ Guide
Comply with the mandatory and prescriptive provisions of ANSI/ASHRAE/IESNA Standard 90.1-2010, with errata (or USGBC approved equivalent standard for projects outside the United States).

Comply with Section 1: Design Process Strategies, Section 2: Core Performance Requirements, and the following six strategies from Section 3: Enhanced Performance Strategies, as applicable. Where standards conflict, the more stringent of the two shall take precedence. For projects outside the United States, consult ASHRAE/ASHRAE/IESNA Standard 90.1-2010, Appendixes B and D, to determine the appropriate climate zone.

3.2 Daylighting and Controls
3.3 Additional Lighting Power Reductions
3.4 Plug Loads/Appliance Efficiency
3.5 Supply Air Temperature Reset (VAV)
3.9 Premium Economizer Performance
3.10 Variable Speed Control

To be eligible for Option 3, the project must be less than 100,000 square feet (10 000 square meters).

Note: K-12 schools, Healthcare, Warehouse or Laboratory projects are ineligible for Option 3.

DATA CENTERS

Whole-Building Energy Simulation
Demonstrate a 5% improvement in the proposed performance rating over the baseline performance rating. To determine total energy cost savings, model two systems, one for building energy cost and the other for IT equipment energy cost. Calculate the baseline building performance according to ANSI/ASHRAE/IESNA Standard 90.1–2010, Appendix G, with errata (or a USGBC-approved equivalent

standard for projects outside the United States), using a simulation model for the whole building and data center modeling guidelines.

Determine the power utilization effectiveness (PUE) value of the proposed design.

For this prerequisite, a minimum of 2% of the 5% energy savings must come from building power and cooling infrastructure.

Projects must meet the minimum percentage savings before taking credit for renewable energy systems.

The proposed design must meet the following criteria:

- compliance with the mandatory provisions of ANSI/ASHRAE/IESNA Standard 90.1–2010, with errata (or a USGBC-approved equivalent standard for projects outside the United States);
- inclusion of all energy consumption and costs within and associated with the building project; and
- comparison against a baseline building that complies with ANSI/ASHRAE/IESNA Standard 90.1–2010, Appendix G, with errata (or a USGBC-approved equivalent standard for projects outside the United States), and data center modeling guidelines.

For data centers, regulated energy includes cooling units for computer and data processing rooms, critical power conditioning equipment, critical distribution equipment, heat rejection plants, and mechanical and electrical support rooms.

Include in process loads both the unregulated load and the IT equipment load. The IT load comprises critical systems and electrical power transformation, which may include servers, storage and networking power use, and operations affecting monthly server CPU utilization percentages.

Develop two sets of IT load models using two scenarios, one at the maximum estimated IT load rating and the second at the startup IT rating expected at the time of commissioning.

Document the energy modeling input assumptions for unregulated loads. Unregulated loads should be modeled accurately to reflect the actual expected energy consumption of the building.

If unregulated loads are not identical for both the baseline and the proposed building performance rating, follow the exceptional calculation method (ANSI/ASHRAE/IESNA Standard 90.1–2010, G2.5) to document measures that reduce unregulated loads.

Projects that are connected to district energy systems (DES) must follow LEED’s DES requirements and modeling guidelines.