Tennessee High Performance Building Requirements: Frequently Asked Questions

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The HPBr Frequently Asked Questions (FAQ) document is intended to document and list questions received by the office of the State Architect from actual project teams applying the High Performance Building Requirements to their project. It is recommended this document is reviewed before posing new questions. It is organized by category with clickable links for easy navigation.

HPBr FAQ Document Version 1.00

TABLE OF CONTENTS

Frequently Asked Questions

GENERAL

1. What is the Tennessee High Performance Building Requirements (HPBr)?

2. How is the TN HPBr different than the Sustainable Design Guidelines?

3. What is the Contractor's role in the HPBr, and what compliance documentation do they need to provide?

4. What is an energy model, and why is it necessary when we already have design standards?

5. How do the energy modeling requirements in the TN HPBr differ from that of the old TN Sustainable Design Guidelines?

6. What does it mean for a credit to be "Applicable?"

1. What is the Tennessee High Performance Building Requirements (HPBr)?

The Tennessee HPBr is a system of design and construction requirements that intends to reduce total cost of ownership, improve project value, and increase the performance and sustainability of Tennessee's portfolio of state buildings. Covering the areas of Land Management, Water Efficiency, Energy Efficiency, Materials and Resources, Indoor Environmental Quality, and Innovations in Design and Construction, the HPBr awards points based on meeting criteria within individual credits, with the minimum number of points being determined by the size and scope of the project. It must be applied to every state-funded or state-owned building project including new construction, additions, and renovation/maintenance projects.

2. How is the TN HPBr different than the Sustainable Design Guidelines?

The Tennessee Sustainable Design Guidelines (SDG) were developed in 2008 as a sustainability manual to assist project teams in developing more sustainable State buildings. While it was intended to be used on all state projects, the SDG lacked the flexibility needed for incorporation into small projects such as additions, renovations, and maintenance projects. As a result, it was not perceived as a mandatory set of requirements. The TN HPBr shares many of the same requirements as the SDG, but now provides a more flexible structure as it is required across all State projects. An Owner's Project Requirements (OPR) document has been introduced which allows Owners and Project Managers to define and communicate performance and sustainability requirements to the Designer. References to industry standards have been updated, and new credits encourage cost-effective, energy-efficient design and operation of the building for its entire life-cycle.

3. What is the Contractor's role in the HPBr, and what compliance documentation do they need to provide?

The Contractor is just as important as the Owner and Designer in achieving Tennessee's High Performance Building Requirements. As is the case with all other contractor requirements, the Designer writes HPBr-related tasks in the construction documents, and the Contractor is expected to carry them out as a part of their scope. Additionally, the Contractor is involved with the rest of the Project Team in identifying on the HPBr Checklist which credits are achievable and are to be pursued. In addition to the completed HPBr Checklist and M&R Calculator, the Contractor's initials and signature on the Credit Verification Form or One-Time Completion Form signify their agreement that they have met the intent of the pursued HPBr credits. Because the Contractor is responsible for constructing the building in accordance with the contract documents, they have a role in achieving most of the HPBr credits.

In general, Project Teams that design and construct buildings in accordance with the pursued HPBr credits on the Checklist do so in good faith, without a rigorous 3rd party review process. However, to provide direction on specific credit compliance documentation, the HPBr requires the Designer to write into their construction documents what information the Contractor's must collect and/or report to show compliance with Land Management, Materials & Resources, and Indoor Environmental Quality credits for which they have a significant role. In effect, this produces a

paper trail to be used should the Owner, State Architect, or outside observer want to audit the HPBr process for a project. These include the following credits:

- LM2.1 Sediment and Erosion Control During Construction
- LM2.2 Limit Site Disturbance During Construction
- LM4.2 Drought Tolerant Plantings
- LM5.2 Roof Surfaces
- MR2.1 Construction Waste Management
- MR3.1 and MR 3.2 Recycled Materials
- MR3.3 Tennessee Produced Materials (Non-wood)
- MR3.4 Tennessee Produced Wood Products
- MR3.5 Regional Materials
- MR3.6 Resource Reuse
- MR3.7 Rapidly Renewable Materials
- EQ5.1 and EQ5.2 Air Quality Management
- EQ6.1 through EQ6.5 Material VOC Limits

In many cases, credit compliance can be shown through submittals or "As-Built" plans. However, in the case of many of the Materials & Resources credits, the HPBr Checklist has a "Materials and Resources Calculator" which can be used to aggregate the appropriate data.

4. What is an energy model, and why is it necessary when we already have design standards?

An energy model is a computer simulation program that can be used as a design tool to inform the project team of opportunities to improve the building design and comply with energy codes and standards such as ASHRAE 90.1 or the International Energy Conservation Code. It can analyze and provide insight into proper building massing and orientation, location, solar exposure, mechanical system selection, lighting and HVAC controls, and many other building attributes. An energy model is ideal at showing the interactions of various systems within the building, optimizing design parameters, and often uncovering counter-intuitive relationships between building parameters and performance.

Like an Owner's Project Requirements, a design standard is ideal for defining minimum acceptable levels of equipment performance, describing preferred system types or manufacturers, and referencing other important design standards. For this reason, energy models can never be a substitute for design standards. However, energy models can be used to explore the space within the bounds of acceptable design defined in these standards, providing design alternatives and valuable results which the project team can incorporate into financial analyses and decision matrices to ensure they meet the requirements of the OPR in a way that minimizes total cost of ownership.

5. How do the energy modeling requirements in the TN HPBr differ from that of the old TN Sustainable Design Guidelines?

The only mandatory energy model analysis within the HPBr is "Schematic Design Energy Modeling" defined in EE3.1. This is not new for state projects, as "Conceptual Energy Modeling" was also required in the original Sustainable Design Guidelines. Due to the preliminary nature of the design during the SD phase, the effort involved in creation of this energy model is minimal compared to one created late in design when much more detail must be modeled (such as a model created for the elective "Improved Energy Performance" credit). The benefits of a relatively simple energy model at this early phase in design come from the ability to quickly model potential solutions that greatly impact performance before substantial effort has been spent on detailing one particular design solution. Additionally, the required analysis in this credit is designed to uncover Load Reduction strategies that may reduce first costs as well as energy costs (i.e. an immediate return on investment).

6. What does it mean for a credit to be "Applicable?"

In determining compliance with the HPBr, the first step is determining which credits are applicable to the project. For most projects, compliance with the HPBr requires project teams to earn at least 50% of the points from applicable credits. Applicability is a designation given to a credit based on whether it can be achieved within scope of the project, regardless of its status as Required or Elective. Credit applicability is typically determined by the State Project Manager or Owner who, in collaboration with the Designer and Contractor, assigns applicability to the appropriate credits in the HPBr Checklist. Knowing whether a credit is applicable or not requires detailed knowledge both of the project scope and the credit requirements, so refer to the HPBr Manual for a description of each credit. A credit cannot be designated as not applicable due to subjective reasons such as perceived impact to the project budget, Designer preference, or Designer or Contractor's failure to meet the credit requirements. In the case of Project Team disagreement on the applicability of a particular credit, the Owner shall provide direction, and Office of the State Architect will make the final determination if needed. Here are a few examples describing credit applicability:

- For new constructions projects, LM1.1 'Reuse existing buildings' is not likely to be applicable due to the lack of existing buildings to reuse.
- For interior renovation/maintenance projects, LM7.1 'Exterior Site Lighting' is not likely to be applicable due to the lack of site lighting modifications.
- For new construction projects, EE4.1 'Energy Efficiency in Existing Buildings" will not be applicable as it is meant for renovation/maintenance projects only.

Return to Top

QUICK START GUIDE

1. What is the "Quick Start Guide?"

1. What is the "Quick Start Guide?"

The Quick Start Guide is a one page document that is meant to assist project teams in carrying out the HPBr process.

The Quick Start Guide provides a flow of activities that project teams and the project owner should take to determine the applicability of the HPBr and how to fill out the Checklist and review which credits are required and how many credits should be targeted by the project teams.

Use this Guide to learn how the HPBr is structured and how to apply it to your project.

Return to Top

OWNER'S PROJECT REQUIREMENTS (OPR)

1. What is the Owner's Project Requirements (OPR)?

2. Who completes the OPR?

3. What is the Designer's role in the OPR?

1. What is the Owner's Project Requirements (OPR)?

The OPR identifies the intended functional requirements and expectations of the building's design and operation. The OPR provides design guidance and acts as a benchmark to measure how well the project met the Owner's goals. It is intended to be a "living document" which is updated as the design progresses, based on feedback from the Designer and Contractor, future users of the building, and O&M staff. The OPR also contains an Applicability Tree which determines the compliance path for the HPBr based on the project budget/scope, including determination of whether certain Energy Efficiency credits are Required or Elective. A commissioning agent uses the OPR document during design and construction reviews to ensure that the building is being designed and built to meet the Owner's Requirements.

2. Who completes the OPR?

The Owner or State Project Manager has the primary responsibility for initially completion of the OPR, and should have it completed by the time the Designer is hired. The Owner or PM should update the OPR with feedback from the Designer and Contractor as the design progresses.

3. What is the Designer's role in the OPR?

The Designer should understand the OPR as initially completed by the Owner or State Project Manager and what the ultimate goals for the OPR are. The Designer should work with the Contractor and Owner to refine the OPR as the design progresses. Finally, the Designer should tailor the design of the building to best meet the OPR.

Return to Top

HPBr MANUAL

1. What is the HPBr Manual?

2. EQ7.2 – Must all designated copying/printing rooms meet the requirements of this credit?

1. What is the HPBr Manual?

The HPBr Manual is the primary document that outlines the details and requirements for complying with the Tennessee High Performance Building Requirements. It functions as a reference document, to be used in conjunction with the OPR and Checklist, and outlines the specific requirements of each credit.

2. EQ7.2 – Must all designated copying/printing rooms meet the requirements of this credit?

Credit EQ7.2 is intended to reduce the negative health effects from indoor pollutants typically found in spaces such as parking garages, housekeeping/janitor closets, and designated copying/printing rooms. Where hazardous gas, chemicals, and particulates are stored or generated in spaces such as these, the credit requires the space to have the following:

- sufficient exhaust to create a negative pressure or negative airflow differential with respect to adjacent spaces,
- self-closing doors, and
- either deck-to-deck partitions or a hard-lid ceiling

Regarding copying/printing rooms specifically, this type of space is usually named similarly on floor plans and is a room generally sized to house one or more printers or copiers along with additional work space for sorting, stapling, and other related activities. However, all three requirements listed above are only required when a copying/printing room is intended for high-volume printing. Copying/printing rooms not intended for high-volume printing must only meet the first requirement relative to exhaust and negative pressurization. Note that when copy rooms without self-closing doors are utilized for lower volume printing, higher airflow differentials are generally needed to provide sufficient negative pressure for this type of copy/printing room.

For the purpose of this credit, high-volume printing is defined as an application where one or more printers or copiers, when combined, have an intended average monthly use of 25,000 pages or greater. A single floor-mounted printer/copier is often capable of high volume printing, though some desktop devices are also capable of this. If the intended average monthly print volume is unknown, the average monthly print volume rating published for the device should be used as an estimate of the likely print volume. The actual (or representative) make/model of each printer/copier should be provided by the Owner or Designer for this purpose. If the type of printer is unknown during the project design, the Designer and Owner should select a likely printer model(s) to serve as the representative anticipated printer type for the project.

Return to Top

CHECKLIST

1. What is the Checklist?

2. How do I submit the Checklist to the Office of the State Architect?

3. When should our team use the "One Time Completion Form" for submission in lieu of the Checklist?

1. What is the Checklist?

The Checklist is a tracking tool to develop the list of applicable credits based on the project scope and determined by the project Owner. The Checklist is used to set the minimum point requirements, set project targets, and track progress through all stages of design.

The Checklist, including all accompanying tabs, is used to show compliance with the HPBr. The Checklist is maintained with project records and submitted to the Office of the State Architect upon project close-out.

2. How do I submit the Checklist to the Office of the State Architect?

The checklist and associated tabs (additional compliance forms) should be submitted to the OSA by the State Procurement Agency responsible for a project. Each project is required to submit a completed checklist at the conclusion of the project as well as keep it as a part of the project documents. Additionally, it is recommended that an interim checklist be submitted at the end of the Construction Documents phase of design.

3. When should our team use the "One Time Completion Form" for submission in lieu of the Checklist?

Project teams are to use the One Time Completion Form to show compliance with the HPBr in the event that 5 or fewer HPBr credits are deemed applicable to the project by the Owner. The One Time Completion Form will list the credits that were deemed applicable to the project and explain how the minimum requirements of each respective credit were met. It is then signed by the Owner, design team, and Contractor and submitted to the OSA. The One Time Completion Form is normally submitted toward the end of the design phases as the construction phase is rarely impacted in these limited use projects. Should the construction modify the comments on the One-Time Completion Form, a corrected version must be submitted.

This is meant to capture projects that are minor or routine maintenance projects with limited opportunities for enhancing building performance. If you are considering using the One Time Completion Form, confirm with the Owner all credits have been reviewed for applicability before proceeding.

Return to Top

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Return to Top