



# Total Building Performance

CERTIFICATE SCHEME HANDBOOK



## **Notice**

Anyone interested in obtaining the BPI Total Building Performance Certificate of Knowledge will need to know the scope of the certificate and all requirements.

This certificate scheme handbook outlines the knowledge, skills and abilities needed for individuals to obtain the BPI Total Building Performance Certificate of Knowledge.

Information in this scheme handbook represents the policies at the date of publication for the BPI Total Building Performance Certificate of Knowledge. Information in this scheme handbook supersedes information contained in any previously published documents.

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## **Acknowledgements**

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## **Disclaimer**

Eligibility standards, exam content, exam standards, fees, and guidelines are subject to change. BPI will keep the most up-to-date version of this document posted at [www.bpi.org](http://www.bpi.org). Prior to participating in any available service through BPI, check to ensure that you have based your decision to proceed on the most up-to-date information available. BPI reserves the right to modify documents prior to accepting any application.

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## 1. About BPI

Founded in 1993, the Building Performance Institute (BPI) is the nation's premier certification and standard-setting organization for home performance professionals. BPI is accredited by the American National Standards Institute, Inc. (ANSI) as a developer of American National Standards and as a certifying body for personnel credentials. BPI develops technical standards for home energy audits and energy efficiency, health, and safety improvements. From these standards, BPI develops rigorous written and field exams resulting in one of BPI's 14 professional certifications. BPI understands the importance of impartiality in carrying out its certification activities, manages conflict of interest and ensures the objectivity of its certification activities.

BPI offers five certificates ([Building Science Principles](#), [Healthy Housing Principles](#), [Site Supervisor](#), [Total Building Performance](#) and [Cold Climate Air Source Heat Pump Assessor](#)) that support professional growth in building performance and healthy housing. From foundational knowledge in building science and healthy housing principles to assessment, advanced diagnostics and on-site leadership, these credentials help ensure quality, safety, and efficiency in home energy and retrofit work.

In addition, BPI offers 14 professional certifications. Today, BPI Certified Professionals hold thousands of active certifications, supported by a nationwide network of Test Centers and Proctors.

BPI is a 501(c)(3) nonprofit corporation, incorporated in New York State on January 18, 1996 (corporation number 14-1789014). Our mission is to advance the home performance industry by providing nationally recognized standards and credentials that ensure homes are comfortable, healthy, safe, durable, and energy efficient. BPI is headquartered in Saratoga Springs, NY.

## 2. BPI Certificate Schemes

BPI offers individual certificates in a number of areas in the residential retrofit industry.

The certificate schemes are developed and then reviewed on an ongoing basis by scheme committees made up of subject matter experts – individuals with credentials and experience within the industry. The scheme committee reviews statistics, industry changes and current certificate scheme requirements on a regular basis.

Industry input on each certificate scheme is encouraged. The scheme committee members will seek input from external sources including, but not limited to:

- industry associations
- professional groups
- government agencies
- consumer/owner advocacy groups

The certificate outlined in this scheme handbook is for individuals involved in recruiting and working with owners of existing residential buildings for a deep retrofit, electrification and decarbonization project. For a full listing of all BPI certificates and certifications offered, see the [www.bpi.org](http://www.bpi.org) website. To obtain the BPI

Total Building Performance Certificate, candidates are required to successfully complete a multiple-choice online exam developed by industry subject matter experts.

### 3. Outline of the Total Building Performance Certificate

This certificate scheme handbook outlines the knowledge, skills, and abilities requirements for the Total Building Performance Certificate (TBP).

The scheme defines the scope of the TBP as the following: Individuals obtaining the Total Building Performance Certificate of Knowledge have demonstrated knowledge in client management, supporting the selection of installers, financing opportunities, and communication with clients involved in a total building energy efficiency and fossil-fuel reduction retrofit project for a residential-style building. They are knowledgeable in the responsibilities for identifying the optimization and sequence of potential deep energy retrofit projects and recruiting building owners to pursue the goal of net zero energy consumption and/or net zero carbon of the building. They have proven awareness and understanding of state, local and utility energy efficiency, and renewable energy programs, and the importance of scope of work development and understanding the interdependencies of proposed measures and systems involved. They have verified an understanding of the energy, cost and carbon impacts of the proposed measures. The individual has shown responsibility for project completion verification to project design, test-out, and any close-out report generation, and for a commissioning review of the project performance post-completion. Lastly, they have exhibited a general understanding of the fundamentals of building science.

This document is intended to include all of the tasks an individual may need to perform when designing a total building performance project, as well as the knowledge, skills, and abilities required to do these tasks.

Please note that a certificate is not a license to practice. All persons who obtain this certificate must comply with applicable federal, state, and local laws and regulations governing the profession.

### 4. Preparing for the Total Building Performance Exam

Before you register for the exam:

- Download the latest version of the BPI TBP certificate scheme handbook from [www.bpi.org](http://www.bpi.org)
- Read and understand all information.
- Refer to the Functions & Tasks section to be sure that you understand and can perform the tasks required for this certificate.
- Obtain reference materials for the multiple-choice exam and study well in advance of taking the exam.
- While training is not required for any BPI certificate, it is highly recommended. Free training modules for the Total Building Performance Certificate of Knowledge can be found [here](#).
- Complete the application and supporting prerequisite requirements to take the TBP Certificate exam, which can be completed [here](#).



## 4.1 Prerequisites

There are two prerequisites candidates must possess in order to sit for the TBP exam.

### Experience

Candidates must have at least 1 year of relevant experience including, but not limited to, years of work experience in the building sector (i.e., technician, auditor, manager, owner).

### Certifications

Candidates must hold at a minimum, the BPI Building Science Principles (BSP), a BPI certification (Building Analyst-Technician, Heating Professional, Energy Auditor, etc.), or other industry recognized certification, such as:

ASHRAE - Building Energy Assessment  
 ASHRAE – Building Energy Modeling  
 ASHRAE -High-Performance Building  
 DOE – Home Energy Score Assessor  
 NABCEP – Associate (PV, Solar, Wind)  
 NABCEP – PV Installation Professional  
 NATE – HVAC Performance Verifier  
 RESNET – Home Energy Rater  
 USGBC – LEED Green Associate  
 USBGC – LEED AP

## 4.2 Certificate Fees, Application, and Scheduling

BPI certificate exams are provided online and can be taken any day of the week, at any hour of the day. In accessing the BPI Certificate Portal, you will be able to submit your application to BPI, pay for your exam and ultimately take the exam.

The cost of the Total Building Performance Certificate of Knowledge exam is \$250, which can be paid after your application has been approved. Processing time for application approvals may take up to 2 weeks.

## 5. Multiple-Choice Exam

In order to obtain the TBP certificate, a candidate must successfully complete a multiple-choice exam, taken online, to ensure competency in the critical tasks defined by BPI.

The multiple-choice exam is comprised of one hundred (100) questions to cover knowledge and skills. There is not a time limit for the exam. The multiple-choice exam consists of multiple versions. The results page at the end of the online exam session will indicate whether a candidate was successful or not.

The passing score for both Forms A and B is 74%.

This exam is an open book exam.

Future discussion or disclosure of the content of the exam, orally or in writing, or by any other means, is prohibited. Theft or attempted theft of exam items is punishable to the fullest extent of the law, termination of status, civil liability, criminal prosecution, or other appropriate sanctions.

## 6. Functions and Tasks

The Knowledge required for this exam is detailed below.

| <b>Domain 1: Demonstrating Proficiency in Designing a Total Building Performance Project</b>       |                                                |
|----------------------------------------------------------------------------------------------------|------------------------------------------------|
| <b><i>Task 1: Establish project goals</i></b>                                                      |                                                |
| <b>Knowledge of:</b>                                                                               |                                                |
| •                                                                                                  | How to document client concerns                |
| •                                                                                                  | How to educate a client                        |
| •                                                                                                  | How to document client expectations            |
| <b><i>Task 2: Establish project scope</i></b>                                                      |                                                |
| <b>Knowledge of:</b>                                                                               |                                                |
| •                                                                                                  | How to develop a scope of work                 |
| •                                                                                                  | How to develop a timeline                      |
| •                                                                                                  | How to determine interdependencies of measures |
| <b><i>Task 3: Establish budget</i></b>                                                             |                                                |
| <b>Knowledge of:</b>                                                                               |                                                |
| •                                                                                                  | Personal economics                             |
| •                                                                                                  | Financing                                      |
| •                                                                                                  | Creating a budget                              |
| <b><i>Task 4: Assemble project documentation</i></b>                                               |                                                |
| <b>Knowledge of:</b>                                                                               |                                                |
| •                                                                                                  | Preparing project documents                    |
| •                                                                                                  | Client fuel release                            |
| <b><i>Task 5: Review individual estimates and contract from installers with intended scope</i></b> |                                                |
| <b>Knowledge of:</b>                                                                               |                                                |
| •                                                                                                  | Comparing contracts                            |
| •                                                                                                  | Energy efficiency measures                     |
| •                                                                                                  | Measure pricing                                |
| <b><i>Task 6: Establish roles and responsibilities for installers and client</i></b>               |                                                |
| <b>Knowledge of:</b>                                                                               |                                                |
| •                                                                                                  | Client/Contractor relations and interactions   |
| •                                                                                                  | Setting goals                                  |
| <b><i>Task 7: Determine existing useful life of the existing equipment</i></b>                     |                                                |
| <b>Knowledge of:</b>                                                                               |                                                |
| •                                                                                                  | Capital improvements                           |



|                                                                                                    |                                                                                   |
|----------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| •                                                                                                  | Measure life                                                                      |
| <b>Domain 2: Understanding Project Financial Analysis for a Total Building Performance Project</b> |                                                                                   |
| <b>Task 1: Understand financing terms, definitions, and requirements</b>                           |                                                                                   |
| <b>Knowledge of:</b>                                                                               |                                                                                   |
| •                                                                                                  | Loan terms                                                                        |
| •                                                                                                  | Interest rates                                                                    |
| •                                                                                                  | Cash flow analysis                                                                |
| •                                                                                                  | Secured loans                                                                     |
| •                                                                                                  | Unsecured loans                                                                   |
| <b>Task 2: Understand energy analysis, long-term cash flow analysis</b>                            |                                                                                   |
| <b>Knowledge of:</b>                                                                               |                                                                                   |
| •                                                                                                  | Energy expenditures                                                               |
| •                                                                                                  | Capital Expenditures                                                              |
| •                                                                                                  | Energy escalation rates                                                           |
| •                                                                                                  | Discount rates                                                                    |
| <b>Task 3: Use various financing mechanisms and models</b>                                         |                                                                                   |
| <b>Knowledge of:</b>                                                                               |                                                                                   |
| •                                                                                                  | On-bill financing                                                                 |
| •                                                                                                  | Leasing                                                                           |
| •                                                                                                  | Cash-out financing                                                                |
| •                                                                                                  | Home equity line of credit                                                        |
| •                                                                                                  | Secured vs. unsecured financing                                                   |
| <b>Task 4: Understand various financial analysis tools/instruments for projects</b>                |                                                                                   |
| <b>Knowledge of:</b>                                                                               |                                                                                   |
| •                                                                                                  | Cost effectiveness                                                                |
| •                                                                                                  | Return on investment                                                              |
| <b>Task 5: Locate available regional/program financing, rebates, incentives, and tax credits</b>   |                                                                                   |
| <b>Knowledge of:</b>                                                                               |                                                                                   |
| •                                                                                                  | Federal, state, and local resources that support renewables and energy efficiency |
| <b>Task 6: Compare financial scenarios</b>                                                         |                                                                                   |
| <b>Knowledge of:</b>                                                                               |                                                                                   |
| •                                                                                                  | Comparing loan terms                                                              |
| •                                                                                                  | Comparing loan interest rates                                                     |
| •                                                                                                  | Comparing current and estimated expenditures                                      |
| <b>Task 7: Communicate effectively to client</b>                                                   |                                                                                   |
| <b>Knowledge of:</b>                                                                               |                                                                                   |
| •                                                                                                  | Effective communication to meet client's goals                                    |

|   |                                                                                                                       |
|---|-----------------------------------------------------------------------------------------------------------------------|
|   | <b><i>Task 8: Understand incremental and avoided cost</i></b>                                                         |
|   | <b>Knowledge of:</b>                                                                                                  |
| • | Avoided costs                                                                                                         |
| • | Incremental costs                                                                                                     |
|   | <b><i>Task 9: Understand impact of energy features on home value</i></b>                                              |
|   | <b>Knowledge of:</b>                                                                                                  |
| • | Home appraisals                                                                                                       |
| • | Appraisal resources                                                                                                   |
| • | Multiple Listing Service                                                                                              |
| • | Home labeling                                                                                                         |
|   | <b>Domain 3: Demonstrating Proficiency in Communication to Clients</b>                                                |
|   | <b><i>Task 1: Identify the client's concerns and goals</i></b>                                                        |
|   | <b>Knowledge of:</b>                                                                                                  |
| • | Effective communication and listening                                                                                 |
|   | <b><i>Task 2: Provide an effective description of decarbonization</i></b>                                             |
|   | <b>Knowledge of:</b>                                                                                                  |
| • | Building decarbonization                                                                                              |
|   | <b><i>Task 3: Communicate to the client a project that represents their goals</i></b>                                 |
|   | <b>Knowledge of:</b>                                                                                                  |
| • | Setting goals for clients                                                                                             |
|   | <b><i>Task 4: Identify the client's communication type</i></b>                                                        |
|   | <b>Knowledge of:</b>                                                                                                  |
| • | Communicating by phone                                                                                                |
| • | Communicating by email                                                                                                |
| • | Communicating by texting                                                                                              |
| • | Sharing files                                                                                                         |
|   | <b>Domain 4: Understanding of Energy Modeling, Load Calculations and Measure Analysis of a Total Building Project</b> |
|   | <b><i>Task 1: Understand optimization scenarios of a building's energy model</i></b>                                  |
|   | <b>Knowledge of:</b>                                                                                                  |
| • | Energy models                                                                                                         |
| • | Interaction of installed measures                                                                                     |
|   | <b><i>Task 2: Understand appropriate balance of installed measures to meet goals and budget</i></b>                   |
|   | <b>Knowledge of:</b>                                                                                                  |
| • | Measure cost                                                                                                          |
| • | Budgets                                                                                                               |
| • | Savings models                                                                                                        |
| • | Non-energy benefits                                                                                                   |
| • | Cash flow                                                                                                             |

|   |                                                                                                                                |
|---|--------------------------------------------------------------------------------------------------------------------------------|
|   | <b><i>Task 3: Understand time dependencies and seasonality impacts on the end-use loads and load shape of the building</i></b> |
|   | <b>Knowledge of:</b>                                                                                                           |
| • | Load shapes                                                                                                                    |
| • | Seasonality impacts                                                                                                            |
| • | Solar output capacity                                                                                                          |
|   | <b><i>Task 4: Understand demand response for the building</i></b>                                                              |
|   | <b>Knowledge of:</b>                                                                                                           |
| • | Demand response                                                                                                                |
| • | Building end-use load shapes                                                                                                   |
| • | Demand response utility programs                                                                                               |
| • | Demand response technologies                                                                                                   |
|   | <b><i>Task 5: Understand dynamic pricing</i></b>                                                                               |
|   | <b>Knowledge of:</b>                                                                                                           |
| • | Dynamic pricing                                                                                                                |
| • | Demand charges                                                                                                                 |
| • | Net metering                                                                                                                   |
|   | <b><i>Task 6: Understand appropriate HVAC and renewable power generation opportunities</i></b>                                 |
|   | <b>Knowledge of:</b>                                                                                                           |
| • | HVAC equipment                                                                                                                 |
| • | On-site power generation                                                                                                       |
| • | Site assessments                                                                                                               |
| • | Pricing                                                                                                                        |
| • | Authority Having Jurisdiction                                                                                                  |
|   | <b><i>Task 7: Understand heat pump technology and options</i></b>                                                              |
|   | <b>Knowledge of:</b>                                                                                                           |
| • | Heat pump technologies                                                                                                         |
| • | Heat pump options                                                                                                              |
| • | Heat pump types                                                                                                                |
|   | <b><i>Task 8: Understand heat pump performance characteristics</i></b>                                                         |
|   | <b>Knowledge of:</b>                                                                                                           |
| • | Heat pump operation                                                                                                            |
| • | Heat pump Coefficient of Performance                                                                                           |
| • | Heating Seasonal Performance Factor                                                                                            |
| • | Heat pump maximum and minimum capacity rates                                                                                   |
| • | Heat pump turn-down ratios                                                                                                     |
| • | Regional and federal resources supporting heat pump performance                                                                |
|   | <b><i>Task 9: Understand heat pump oversizing/under-sizing impacts</i></b>                                                     |
|   | <b>Knowledge of:</b>                                                                                                           |
| • | Building design load and heat pump system sizing relationship                                                                  |

|   |                                                                                                                                                  |
|---|--------------------------------------------------------------------------------------------------------------------------------------------------|
| • | Heat pump oversizing impacts                                                                                                                     |
| • | Heat pump under-sizing impacts                                                                                                                   |
| • | Heat pump short cycling                                                                                                                          |
| • | Comfort issues related to heat pumps                                                                                                             |
|   | <b><i>Task 10: Understand heat pump load calculation and equipment selection including limitations as related to cold climate heat pumps</i></b> |
|   | <b>Knowledge of:</b>                                                                                                                             |
| • | Heat pump load calculations and ACCA Manual J limitations                                                                                        |
| • | Heat pump equipment selection and ACCA Manual S                                                                                                  |
| • | Cold climate heat pump equipment limitations                                                                                                     |
|   | <b><i>Task 11: Understand sizing and siting solar</i></b>                                                                                        |
|   | <b>Knowledge of:</b>                                                                                                                             |
| • | Solar system siting                                                                                                                              |
| • | Solar system sizing                                                                                                                              |
| • | Solar system mounting strategies                                                                                                                 |
| • | Grid-connected solar                                                                                                                             |
| • | Off-grid connected solar                                                                                                                         |
| • | Modeled solar usage                                                                                                                              |
| • | Site assessments for solar installations                                                                                                         |
|   | <b><i>Task 12: Understand solar grid connectivity</i></b>                                                                                        |
|   | <b>Knowledge of:</b>                                                                                                                             |
| • | Net metering for solar                                                                                                                           |
| • | Solar panel options                                                                                                                              |
| • | Solar output                                                                                                                                     |
| • | Solar system parts                                                                                                                               |
| • | Production meter vs. utility meter                                                                                                               |
| • | Interconnection agreements                                                                                                                       |
| • | Solar pricing                                                                                                                                    |
|   | <b><i>Task 13: Understand battery storage dispatching and grid connectivity</i></b>                                                              |
|   | <b>Knowledge of:</b>                                                                                                                             |
| • | Net metering for batteries                                                                                                                       |
| • | Battery storage panel options                                                                                                                    |
| • | Battery output                                                                                                                                   |
| • | Battery storage system parts                                                                                                                     |
| • | Production meter vs. utility meter                                                                                                               |
| • | Interconnection agreements                                                                                                                       |
| • | Battery storage pricing                                                                                                                          |
|   | <b><i>Task 14: Understand operation and installation of backup heating options</i></b>                                                           |
|   | <b>Knowledge of:</b>                                                                                                                             |
| • | Heat pump backup heating operation                                                                                                               |

|   |                                                                                             |
|---|---------------------------------------------------------------------------------------------|
| • | Heat pump backup heating types                                                              |
| • | Heat pump backup heating controls                                                           |
|   | <b><i>Task 15: Understand heat pump distribution strategies for the building layout</i></b> |
|   | <b>Knowledge of:</b>                                                                        |
| • | Heat pump system types                                                                      |
| • | Heat pump system distribution                                                               |
| • | Distribution system filtration                                                              |
| • | Distribution system design                                                                  |
|   | <b><i>Task 16: Understand renewable fuel heating strategies</i></b>                         |
|   | <b>Knowledge of:</b>                                                                        |
| • | Renewable heating fuel types                                                                |
| • | Renewable heating fuel feedstocks                                                           |
| • | Renewable heating system types                                                              |
|   | <b>Domain 5: Understanding of Building Science and Whole-Building Concepts</b>              |
|   | <b><i>Task 1: Understand moisture management in building upgrades</i></b>                   |
|   | <b>Knowledge of:</b>                                                                        |
| • | Relative humidity                                                                           |
| • | Moisture drive in buildings                                                                 |
| • | Condensing surfaces                                                                         |
| • | Humidity control options for buildings                                                      |
|   | <b><i>Task 2: Understand retrofit ventilation strategies</i></b>                            |
|   | <b>Knowledge of:</b>                                                                        |
| • | Building retrofit ventilation types                                                         |
| • | Balanced vs. unbalanced building ventilation strategies                                     |
| • | Local ventilation                                                                           |
| • | Source control                                                                              |
| • | Whole-house filtration                                                                      |
| • | Indoor Air Quality                                                                          |
| • | ASHRAE 62.2                                                                                 |
|   | <b><i>Task 3: Understand deep envelope retrofit strategies</i></b>                          |
|   | <b>Knowledge of:</b>                                                                        |
| • | Continuous wall insulation                                                                  |
| • | Thermal boundaries                                                                          |
| • | Pressure boundaries                                                                         |
| • | Infrared thermal scan technology                                                            |
|   | <b><i>Task 4: Understand non-energy impacts of a deep retrofit</i></b>                      |
|   | <b>Knowledge of:</b>                                                                        |
| • | Non-energy impacts                                                                          |
| • | Benefits of retrofits on the climate                                                        |

|                                                                                                                                    |                                                                                 |
|------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| •                                                                                                                                  | Benefits of retrofits on occupant health                                        |
| •                                                                                                                                  | Benefits of retrofits on the building's resilience                              |
| •                                                                                                                                  | Benefits of retrofits on the building's durability                              |
| •                                                                                                                                  | Benefits of retrofits on occupant's comfort                                     |
| •                                                                                                                                  | Benefits of retrofits on the home's resale value                                |
| <b>Domain 6: Understanding Project Carbon Impacts</b>                                                                              |                                                                                 |
| <b>Task 1: Understand utility generation mix</b>                                                                                   |                                                                                 |
| <b>Knowledge of:</b>                                                                                                               |                                                                                 |
| •                                                                                                                                  | Power generation fuel mixing                                                    |
| •                                                                                                                                  | CO2 equivalent of power generation from various fuels                           |
| <b>Task 2: Understand state and regional carbon reduction goals</b>                                                                |                                                                                 |
| <b>Knowledge of:</b>                                                                                                               |                                                                                 |
| •                                                                                                                                  | Integrated resource plans for carbon reduction                                  |
| •                                                                                                                                  | Information of state carbon reduction goals                                     |
| •                                                                                                                                  | US State Greenhouse Gas Emissions Targets                                       |
| <b>Task 3: Understand embodied carbon as it relates to recommendations</b>                                                         |                                                                                 |
| <b>Knowledge of:</b>                                                                                                               |                                                                                 |
| •                                                                                                                                  | Embodied carbon footprint calculators                                           |
| •                                                                                                                                  | Refrigerant impacts on CO2                                                      |
| •                                                                                                                                  | Life cycle analysis and assessment of embodied carbon in construction materials |
| <b>Task 4: Understand carbon impact of the combined measures</b>                                                                   |                                                                                 |
| <b>Knowledge of:</b>                                                                                                               |                                                                                 |
| •                                                                                                                                  | Greenhouse Gas Equivalency calculators                                          |
| •                                                                                                                                  | Scopes of greenhouse gas emissions                                              |
| •                                                                                                                                  | Measuring carbon savings                                                        |
| <b>Task 5: Understand carbon metrics</b>                                                                                           |                                                                                 |
| <b>Knowledge of:</b>                                                                                                               |                                                                                 |
| •                                                                                                                                  | Carbon footprint scores                                                         |
| •                                                                                                                                  | Average carbon emissions                                                        |
| •                                                                                                                                  | Weighted average carbon intensity                                               |
| •                                                                                                                                  | Resources and data sources for determining CO2 emissions                        |
| <b>Domain 7: Identifying Electrification/Decarbonization Technologies</b>                                                          |                                                                                 |
| <b>Task 1: Provide client with information on alternative technologies for replacement of fossil-fuel space heating appliances</b> |                                                                                 |
| <b>Knowledge of:</b>                                                                                                               |                                                                                 |
| •                                                                                                                                  | Non-fossil fuel space heating appliance alternatives                            |
| •                                                                                                                                  | Non-fossil fuel space heating appliance operation                               |
| •                                                                                                                                  | Non-fossil fuel space heating appliance installation site requirements          |

|                                                                                                                                    |                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|
| <b>Task 2: Provide client with information on alternative technologies for replacement of fossil-fuel water heating appliances</b> |                                                                        |
| <b>Knowledge of:</b>                                                                                                               |                                                                        |
| •                                                                                                                                  | Non-fossil fuel water heating appliance alternatives                   |
| •                                                                                                                                  | Non-fossil fuel water heating appliance operation                      |
| •                                                                                                                                  | Non-fossil fuel water heating appliance installation site requirements |
| <b>Task 3: Provide client with information on electric cooking appliances</b>                                                      |                                                                        |
| <b>Knowledge of:</b>                                                                                                               |                                                                        |
| •                                                                                                                                  | Electric ranges                                                        |
| •                                                                                                                                  | Electric cooktops                                                      |
| •                                                                                                                                  | Electric grills                                                        |
| •                                                                                                                                  | Site consideration and wiring needs                                    |
| <b>Task 4: Provide client with information on electric clothes drying appliances</b>                                               |                                                                        |
| <b>Knowledge of:</b>                                                                                                               |                                                                        |
| •                                                                                                                                  | Electric clothes dryers                                                |
| •                                                                                                                                  | Electric clothes dryer site requirements                               |
| •                                                                                                                                  | Heat pump clothes dryers                                               |
| •                                                                                                                                  | Heat pump clothes dryer site requirements                              |
| •                                                                                                                                  | Heat pump dryer benefits                                               |
| <b>Task 5: Provide client with information on electric fireplaces</b>                                                              |                                                                        |
| <b>Knowledge of:</b>                                                                                                               |                                                                        |
| •                                                                                                                                  | Electric fireplace types                                               |
| •                                                                                                                                  | Electric fireplace site requirements                                   |
| <b>Task 6: Provide client with information on on-site power generation technologies</b>                                            |                                                                        |
| <b>Knowledge of:</b>                                                                                                               |                                                                        |
| •                                                                                                                                  | Grid-connected on-site power generation technology                     |
| •                                                                                                                                  | Off-grid on-site power generation technology                           |
| •                                                                                                                                  | Owned vs. leased equipment                                             |
| <b>Task 7: Provide client with information on off-site power generation</b>                                                        |                                                                        |
| <b>Knowledge of:</b>                                                                                                               |                                                                        |
| •                                                                                                                                  | Community solar                                                        |
| •                                                                                                                                  | Green power                                                            |
| •                                                                                                                                  | Renewable Energy Credits                                               |
| <b>Task 8: Provide client with information on on-site battery storage technologies</b>                                             |                                                                        |
| <b>Knowledge of:</b>                                                                                                               |                                                                        |
| •                                                                                                                                  | Grid-connected battery storage                                         |
| •                                                                                                                                  | Non-grid-connected battery storage                                     |

|                                                                                                                   |                                                                                              |
|-------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| <b>Task 9: Provide client with information on thermal storage technologies for space and water heating</b>        |                                                                                              |
| <b>Knowledge of:</b>                                                                                              |                                                                                              |
| •                                                                                                                 | Thermal storage                                                                              |
| •                                                                                                                 | Thermal storage technologies                                                                 |
| •                                                                                                                 | Thermal storage site considerations                                                          |
| •                                                                                                                 | Thermal storage operation                                                                    |
| <b>Task 10: Provide client with information on electric vehicles and on-site charging stations</b>                |                                                                                              |
| <b>Knowledge of:</b>                                                                                              |                                                                                              |
| •                                                                                                                 | Electric vehicles                                                                            |
| •                                                                                                                 | Electric vehicle charging stations                                                           |
| •                                                                                                                 | Electric vehicle charging stations site considerations                                       |
| <b>Task 11: Provide client with information on electrical service entrance panel upgrades</b>                     |                                                                                              |
| <b>Knowledge of:</b>                                                                                              |                                                                                              |
| •                                                                                                                 | Electrical service entrance panel parts                                                      |
| •                                                                                                                 | Electrical service entrance panel types - flush mount, surface mount, circuit breaker, fuses |
| •                                                                                                                 | Electrical service entrance panel amperage/size                                              |
| •                                                                                                                 | Subpanels                                                                                    |
| •                                                                                                                 | Utility transformer capacities and considerations                                            |
| •                                                                                                                 | Utility service laterals                                                                     |
| <b>Task 12: Provide client with information on electric and battery-powered outdoor power equipment and tools</b> |                                                                                              |
| <b>Knowledge of:</b>                                                                                              |                                                                                              |
| •                                                                                                                 | Electric and battery-powered outdoor equipment and tools alternatives                        |
| •                                                                                                                 | Why electric and battery-powered outdoor equipment and tools are better for the environment  |
| <b>Task 13: Provide client with information on average consumption end use of each technology</b>                 |                                                                                              |
| <b>Knowledge of:</b>                                                                                              |                                                                                              |
| •                                                                                                                 | How much each end use impacts the total energy consumption for sizing considerations         |
| <b>Domain 8: Understanding the Post Retrofit Process</b>                                                          |                                                                                              |
| <b>Task 1: Understand occupant behaviors as they relate to interfacing equipment</b>                              |                                                                                              |
| <b>Knowledge of:</b>                                                                                              |                                                                                              |
| •                                                                                                                 | Internet of Things technologies                                                              |
| •                                                                                                                 | Setting up interfacing technologies to client lifestyle                                      |
| <b>Task 2: Develop handoff instructions for client</b>                                                            |                                                                                              |
| <b>Knowledge of:</b>                                                                                              |                                                                                              |
| •                                                                                                                 | Pertinent information needed for client                                                      |
| •                                                                                                                 | Preventative maintenance schedules                                                           |
| •                                                                                                                 | Equipment monitoring technologies                                                            |



| <b>Task 3: Confirm installed measures meet work order post-completion</b> |                                                                                  |
|---------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| <b>Knowledge of:</b>                                                      |                                                                                  |
| •                                                                         | Process for conducting a post-installation inspection                            |
| •                                                                         | Information needed for conducting a post-installation inspection                 |
| •                                                                         | How to determine installed equipment operates as specified (retro-commissioning) |
| <b>Task 4: Follow up with installers and client post-completion</b>       |                                                                                  |
| <b>Knowledge of:</b>                                                      |                                                                                  |
| •                                                                         | Process for conducting a post-installation review with installers                |
| •                                                                         | Information needed for conducting a post-installation review with installers     |
| •                                                                         | Process for conducting a post-installation review with client                    |
| •                                                                         | Information needed for conducting a post-installation review with client         |
| <b>Task 5: Understand project incentive/rebate process at closeout</b>    |                                                                                  |
| <b>Knowledge of:</b>                                                      |                                                                                  |
| •                                                                         | Process for conducting a post-installation closeout                              |
| •                                                                         | Information needed for conducting a post-installation closeout                   |
| •                                                                         | Utility, local, state, and federal incentives/rebates                            |

## 7. TBP Certificate of Knowledge Exam Blueprint

| Domain and Tasks                                                                            | %   |
|---------------------------------------------------------------------------------------------|-----|
| Domain 1: Demonstrating Proficiency in Designing a Total Building Performance Project       | 16% |
| Task 1: Establish project goals                                                             |     |
| Task 2: Establish project scope                                                             |     |
| Task 3: Establish budget                                                                    |     |
| Task 4: Assemble project documentation                                                      |     |
| Task 5: Review individual estimates and contracts from installers with intended scope       |     |
| Task 6: Establish roles and responsibilities for installers and client                      |     |
| Task 7: Determine existing useful life of capital improvements                              |     |
| Domain 2: Understanding Project Financial Analysis for a Total Building Performance Project | 9%  |
| Task 1: Understand financing terms, definitions, and requirements                           |     |
| Task 2: Understand energy analysis, long-term cash flow analysis                            |     |
| Task 3: Use various financing mechanisms and models                                         |     |
| Task 4: Understand various financial analysis tools/instruments for projects                |     |
| Task 5: Locate available regional/program financing, rebates, incentives, and tax credits   |     |
| Task 6: Compare financial scenarios                                                         |     |
| Task 7: Communicate effectively to client                                                   |     |
| Task 8: Understand incremental and avoided cost                                             |     |
| Task 9: Understand impact of energy features on home value                                  |     |

| Domain and Tasks                                                                                                                   | %   |
|------------------------------------------------------------------------------------------------------------------------------------|-----|
| Domain 3: Demonstrating Proficiency in Communication to Clients                                                                    | 10% |
| Task 1: Identify the client's concerns and goals                                                                                   |     |
| Task 2: Provide an effective description of decarbonization                                                                        |     |
| Task 3: Communicate to the client a project that represents their goals                                                            |     |
| Task 4: Identify the client's communication type                                                                                   |     |
| Domain 4: Understanding of Energy Modeling, Load Calculations and Measure Analysis of a Total Building Performance Project         | 20% |
| Task 1: Understand optimization scenarios of a building's energy model                                                             |     |
| Task 2: Understand appropriate balance of installed measures to meet goals and budget                                              |     |
| Task 3: Understand time dependencies and seasonality impacts on the end-use loads and load shape of the building                   |     |
| Task 4: Understand demand response for the building                                                                                |     |
| Task 5: Understand dynamic pricing                                                                                                 |     |
| Task 6: Understand appropriate HVAC and renewable power generation opportunities                                                   |     |
| Task 7: Understand heat pump technology and options                                                                                |     |
| Task 8: Understand heat pump performance characteristics                                                                           |     |
| Task 9: Understand heat pump oversizing/under-sizing impacts                                                                       |     |
| Task 10: Understand heat pump load calculation and equipment selection including limitations as related to cold climate heat pumps |     |
| Task 11: Understand sizing and siting solar                                                                                        |     |
| Task 12: Understand solar grid connectivity                                                                                        |     |
| Task 13: Understand battery storage dispatching and grid connectivity                                                              |     |
| Task 14: Understand operation and installation of backup heating options                                                           |     |
| Task 15: Understand heat pump distribution strategies for the building layout                                                      |     |
| Task 16: Understand renewable fuel heating strategies                                                                              |     |
| Domain 5: Understanding of Building Science and Whole-building Concepts                                                            | 14% |
| Task 1: Understand moisture management in building upgrades                                                                        |     |
| Task 2: Understand retrofit ventilation strategies                                                                                 |     |
| Task 3: Understand deep envelope retrofit strategies                                                                               |     |
| Task 4: Understand non-energy impacts of a deep retrofit                                                                           |     |
| Domain 6: Understanding Project Carbon Impacts                                                                                     | 11% |
| Task 1: Understand utility generation mix                                                                                          |     |
| Task 2: Understand state and regional carbon reduction goals                                                                       |     |
| Task 3: Understand embodied carbon as it relates to recommendations                                                                |     |
| Task 4: Understand carbon impact of the combined measures                                                                          |     |
| Task 5: Understand carbon metrics                                                                                                  |     |

| Domain and Tasks                                                                                                            | %   |
|-----------------------------------------------------------------------------------------------------------------------------|-----|
| Domain 7: Identifying Electrification/Decarbonization Technologies                                                          | 12% |
| Task 1: Provide client with information on alternative technologies for replacement of fossil-fuel space heating appliances |     |
| Task 2: Provide client with information on alternative technologies for replacement of fossil-fuel water heating appliances |     |
| Task 3: Provide client with information on electric cooking appliances                                                      |     |
| Task 4: Provide client with information on electric clothes drying appliances                                               |     |
| Task 5: Provide client with information on electric fireplaces                                                              |     |
| Task 6: Provide client with information on on-site power generation technologies                                            |     |
| Task 7: Provide client with information on offsite power generation                                                         |     |
| Task 8: Provide client with information on on-site battery storage technologies                                             |     |
| Task 9: Provide client with information on thermal storage technologies for space and water heating                         |     |
| Task 10: Provide client with information on electric vehicles and on-site charging stations                                 |     |
| Task 11: Provide client with information on electrical service entrance panel upgrades                                      |     |
| Task 12: Provide client with information on electric and battery-powered outdoor power equipment and tools                  |     |
| Task 13: Provide client with information on average consumption end use of each technology                                  |     |
| Domain 8: Understanding the Post-Retrofit Process                                                                           | 8%  |
| Task 1: Understand occupant behaviors as they relate to interfacing equipment                                               |     |
| Task 2: Develop handoff instructions for client                                                                             |     |
| Task 3: Confirm installed measures meet work order post-completion                                                          |     |
| Task 4: Follow up with installers and client post-completion                                                                |     |
| Task 5: Understand project incentive/rebate process at closeout                                                             |     |

## 8. Standards of Reference

All BPI exams are based on a mixture of industry practices, axiomatic<sup>1</sup> concepts, and major standards of reference. No singular source exists that could touch upon every aspect of what is considered testable. Conversely, there is no limit to the potential useful material found in print and online.

- ANSI/BPI-1100-T-2023 Home Energy Auditing Standard
- ANSI/BPI-1200-S-2017 Standard Practice for Basic Analysis of Buildings

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<sup>1</sup> An axiomatic concept is something implicit that requires no proof or explanation (e.g., the sum of 2 and 2 is 4, or gravity states that if you drop something, it will fall to a lower level).

## 9. Exam Security

Exams are highly confidential materials. Any attempts to willfully compromise the integrity of the exam, the exam process, or the certificate process shall be taken seriously. Offenders may be prosecuted to the fullest extent of the law. In addition, any certificate credential may be revoked immediately if a breach is proven to have been made by an individual.

## 10. Granting

In order to receive the TBP certificate, the candidate must successfully complete the multiple-choice online exam.

### 10.1 Notification of Exam Results and Issuance of Certificate

If you successfully passed the TBP exam, the TBP Certificate of Knowledge will be available through your TBP Dashboard. You may select the Print Certificate button and save your certificate to your computer or print it.

Once the certificate is awarded, it does not expire and may be accessed at any time by simply logging in via <https://tbp.bpi.org/portal/tbp/>.

## 11. Surveillance

Surveillance of the Certificate Holder is established to ensure compliance with the policies and procedures for which the certificate of knowledge was granted. The certificate of knowledge for any individual may be withdrawn or revoked due to a Certificate Holder's negligent refusal to follow the certificate scheme requirements or failure to take appropriate corrective action as required by BPI.

## 12. File Review

The Certification Department will conduct a file review of Certificate Holders who have complaints filed against them. The review of the Certificate Holder's file activities includes confirmation that any complaints against the Certificate Holder have been resolved.

## 13. Corrective / Preventative Action

The corrective / preventative action shall include one of the following and is determined on a case-by-case basis at the discretion of BPI:

**Level One:** Corrective action will be given when the infraction is considered minor in nature. A written warning shall be sent to the Certificate Holder about the nature of the infraction along with the required corrective action. The written warning shall become part of the Certificate Holder's record.

**Level Two:** Corrective action will be given when the infraction is considered major in nature and requires proof. A written warning is sent to the Certificate Holder about the infraction. The Certificate Holder is

required to submit proof, in writing, that the infraction has been corrected. The written warning and response will become part of the Certificate Holder's record.

## 14. Withdrawal of Certificate of Knowledge

Should the BPI Total Building Performance Certificate Holder not maintain the certificate of knowledge by being unable to fulfill the obligation of the certificate of knowledge due to illness, disability, change of profession, etc., the certificate of knowledge will be withdrawn at the request of the Certificate Holder. BPI must be notified immediately if a Certificate Holder may not be able to, or is no longer able to, fulfill the requirements of the certificate of knowledge.

BPI reserves the right, on a case-by-case basis, to withdraw a person's BPI Certificate(s) of Knowledge at its discretion. Reasons for withdrawal of a BPI Certificate(s) of Knowledge include, but are not limited to:

- Failure to take steps to submit the requested information of a corrective action as outlined in Section 13
- Failure to follow BPI Standards that align with the certificate's Functions and Tasks, when applicable

In the event that the BPI Total Building Performance Certificate of Knowledge is withdrawn; the BPI Manager of Client Relations will review the Certificate Holder's record and send confirmation of the withdrawal within 30 days and provide a written statement in regard to steps that must be taken if the candidate requests the certificate of knowledge be reinstated.

Use of the BPI logo or brand and representation of holding the BPI Total Building Performance Certificate of Knowledge must cease immediately if a certificate or certification is withdrawn or revoked.

## 15. Complaints

BPI recognizes that there are two main types of complaints that may be brought to its attention:

- Complaints regarding BPI and/or its related vendor organization (administrative, testing, Test Center, proctor, etc.)
- Complaints regarding BPI Certified Professionals or BPI Certificate Holders or organizations with BPI Certified Professionals or BPI Certificate Holders on staff

### Complaints Process

To file a complaint, the individual must follow the procedures, below:

1. Individuals who wish to file a complaint pertaining to any aspect of the certificate of knowledge or testing process, work performed by other BPI Certified Professionals or BPI Certificate Holders, or any other BPI related concerns, please follow the procedures below:
  - a. Submit the Complaint Form via the [BPI website](#)

Go to [www.bpi.org](http://www.bpi.org) and hover over **About Us** at the top of the page, select **Contact Us**. Enter your information and choose **Complaint Form** from the **Category** dropdown box.

- b. Send a letter via registered mail to:  
 Building Performance Institute, Inc.  
 Attn: Complaints  
 63 Putnam Street, Suite 202  
 Saratoga Springs, NY 12866
- c. Send an email to [Complaints@bpi.org](mailto:Complaints@bpi.org)
2. The request for review must provide specific details for the complaint and any type of documented information that pertains to the situation.
3. The review will be carried out on a case-by-case basis by the Quality Assurance (QA) Department. Review results will be forwarded to the Director, who will provide the decision to the complainant, via email, within 30 to 40 days of receiving the complaint.

## 16. Secondary and Tertiary Appeal Procedures

If BPI receives an appeal to any decision it has made, including a decision on the certificate of knowledge (suspension or otherwise), a resolution for any complaint, or the outcome of a secondary appeal, the person shall be instructed to submit the appeal by the following procedure.

*\*Note: Any staff member that may have worked on the decision-making process for an initial complaint or appeal will not be involved in the decision-making process for any follow-up appeal. Also, appeals cannot be made against any online multiple-choice exam results.*

1. An appeal must be made within thirty (30) days from the date that the initial outcome of the original complaint or appeal occurred. The request for review may be made in the following manner:
  - a. Submit the Complaint Form via the BPI website:  
 Go to [www.bpi.org](http://www.bpi.org) and select **About Us** at the top of the page, then **Contact Us**. Enter your information and choose **Complaint Form** from the **Category** dropdown box.
  - b. Send a letter via registered mail to:  
 Building Performance Institute, Inc.  
 Attn: Complaints  
 63 Putnam Street, Suite 202  
 Saratoga Springs, NY 12866
  - c. Send an email to [Complaints@bpi.org](mailto:Complaints@bpi.org)
2. The request for review must provide specific details for the appeal and any type of documented information that pertains to the situation.

3. The review will be carried out on a case-by-case basis by the Compliance Department. Review results will be forwarded to the appropriate BPI staff, who will provide the decision to the complainant, via email, within 30 to 40 days of receiving the complaint.
4. Decisions made about a tertiary appeal are final.

## **17. Comments**

Submit any comments regarding the certificate exams or processes to [Certification@bpi.org](mailto:Certification@bpi.org).

**\*\*This letter is not valid unless presented on company letterhead\*\***

Date:

Re: Proof of relevant experience with total building performance (1<sup>st</sup> main bullet point under Section 4.1) for the Total Building Performance Exam

To: [submit with application]

This letter is to verify that \_\_\_\_\_ has at least 1 year of relevant experience including, but not limited to, years of work experience in the building sector (i.e., technician, auditor, manager, owner).

By signing this document, you are attesting that the information provided on this form is true and accurate to the best of your knowledge and the stated applicant's participation in the task(s) or job functions as described above are true and correct.

Supervisor's Name and title (typed):

\_\_\_\_\_

Supervisor's signature: \_\_\_\_\_ Date: \_\_\_\_\_



## Terms and Definitions

**BPI National Standards** – The set of technical protocols and procedures that have been developed through an open, transparent, consensus-based process and are intended to achieve a high quality of residential building performance. BPI is approved by the American National Standards Institute, Inc. (ANSI) as an accredited developer of American National Standards.

**Candidate** – Applicant who has fulfilled specified prerequisites, allowing his/her participation in the certificate process.

**Certificate Process** – All activities by which a certification body establishes that a person fulfills specified competence requirements, including application, evaluation, decision on certificates, surveillance, and use of certificates and logos/marks.

**Certificate Scheme** – Specific certificate requirements related to specified categories of persons to which the same particular standards and rules, and the same procedures apply.

**Certificate System** – Set of procedures and resources for carrying out the certificate process as per a certificate scheme, leading to the issuance of a certificate of competence, including maintenance.

**Competence** – Demonstrated ability to apply knowledge and/or skills and, where relevant, demonstrated personal attributes, as defined in the certificate scheme.

**Complaint** – Conformity assessment request, by any organization or individual to a certification body, for corrective action relating to the activities of that body or to those of any of its customers.

**Evaluation** – Process that assesses a person's fulfillment of the requirements of the scheme, leading to a decision on certificate.

**Exam** – Mechanism that is part of the evaluation, which measures a candidate's competence by one or more means such as online, oral, practical and observational.

**Qualification** – Demonstration of personal attributes, education, training and/or work experience.

**Quality Assurance** – The observation techniques and activities used externally by an organization to evaluate the effectiveness of their quality management system and to provide feedback that may result in quality improvements.

**Scheme Committee** – Group of people chosen by the certification body to provide input, recommendations, guidance, and review of a certificate scheme.