



Multifamily Building Operator Professional

TESTING KNOWLEDGE LIST



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Acknowledgements

The Building Performance Institute, Inc. would like to thank those who support the BPI national expansion and all of the dedicated professionals who have participated in the development of this document.

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Preface

This policy and procedures manual was developed under contract for the Building Performance institute, Inc. The manual will be reviewed on a three-year basis and modification may be made at that time or sooner if it is deemed to improve the certification process.

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1. Multifamily Building Operator Professional Testing Knowledge List

1.1 Building Science

1. Understand basic heat transfer mechanisms
2. Understand moisture transport mechanisms
3. Understand relative humidity, condensation, and how they are related to comfort
4. Basic principles of air conditioning
5. Understand multifamily building airflow characteristics (single zone, parallel floor, compartmentalization, etc.)
6. Understand and Identify typical multifamily ventilation system design strategies and applications
7. Associate interaction of stack effect and airflows in ventilation stacks
8. Understand air leakage issues related to elevators
9. Understand the difference between nominal and effective R-value
10. Understand IAQ pollutant transport mechanisms
11. Understand basic combustion science
12. Understand combustion technologies
13. Understand how heat recovery works for ventilation systems
14. Understand how heat recovery works for domestic hot water systems
15. Identify correct foot-candle requirements for light levels in different areas of the building
16. Associate relationship between lighting/appliance retrofits with internal gains and heating/cooling loads
17. Be familiar with proper de-manufacturing and disposal procedures for appliances and lighting components
18. Basic understanding of electrical systems
19. Understand how a building envelope works
20. Define air barrier
21. Define thermal barrier / boundary
22. Describe how wall assemblies effect the drying ability of the wall when water intrusion occurs
23. Define flashing and examples of use

1.2 Auditing and Reporting Skills

1. Basic knowledge of operation and major parts of furnace distribution systems
2. Ability to read instructions and follow them for distribution controls
3. Basic knowledge of ventilation (exhaust, intake, leakage) as well as codes
4. Ability to know the scope of work for a contractors and ensure proper installation
5. Ability to schedule and stage work effectively and efficiently
6. Evaluate the flow of combustion products out of the building

7. Ability to use simple tools to follow flow of combustion air and identify back drafting and spillage
8. Need to identify tell tale signs of back drafting, spillage, and condensation in the flue
9. Relationship between boiler water aqua stat settings, DHW temp and cost of maintaining
10. Knowledge of control settings
11. Knowledge of mixing and tempering valves
12. Ability to distinguish between routine maintenance tasks and basic repair work
13. Understand energy efficient lighting options and design including controls
14. Develop protocols for lighting replacement in areas of building owner responsibility
15. Understanding of utility bills and usage patterns including demand
16. Establish comprehensive lighting schedule and procedures for planned replacement
17. Train maintenance staff on procedures
18. Train maintenance staff and residents on proper operation
19. Understand reasons to keep and use logs
20. Ability to create a log from a set of data
21. Translate information on logs into action steps
22. Create and maintain systems for the safekeeping of records, logs
23. Maintain professional licenses as required by governmental regulations
24. Develop and maintain a system for tracking and completing work orders
25. Develop Vendor files for storage of contracts, invoices and other information pertinent to the vendor relationship
26. Develop and maintain a system for tracking utility use
27. Identify components of typical wall assemblies that make up the envelope and understand their functions
28. Identify various structural systems
29. Identify typical roof assemblies
30. Identify common exterior finishes
31. Describe an air barrier and its function in a building
32. Identify proper air barrier materials
33. Identify moisture tolerant materials for areas that are high risk for moisture
34. Identify common types of insulation
35. Identify the signs of deterioration for common exterior finishes
36. Identify typical causes of deterioration
37. Identify examples of improperly installed and/or deteriorating flashing
38. Know different types of doors and windows to characterize their energy performance

1.3 Inspection and Diagnostic Skills

1. Diagnose heating/cooling imbalance and correct basic complaints
2. Basic knowledge of distribution, balancing, bleeding
3. Knowledge of one pipe vs. two pipe systems
4. Knowledge of tankless and sidearm hot water makers
5. Knowledge of boiler pressure, low fire pressure, modulating pressure
6. Difference between pressure troll and vapor stat

7. Ability to test ventilation performance with little to no equipment
8. Ability to determine duct insulation levels
9. Ability to determine duct sealing needs
10. Basic A/C maintenance, cleaning filters
11. Record flue temperatures
12. Record daily fuel usage in logs for tracking of building efficiency and need for maintenance
13. Knowledge of paper and/or electronic log book systems
14. Ability to analyze and interpret log data and take appropriate corrective action
15. Water temperature testing at taps and shower heads
16. Perform periodic maintenance and repair of water heaters and tanks
17. Identify when the envelope has failed
18. Working knowledge of (EMS) system and how to read and control system for maximum efficiency
19. Reduce or eliminate potential sources of standing water
20. Conduct regular inspections of roof for possible damage and potential leaks
21. General understanding of diagnostic equipment and procedures
22. Train on proper utilization of diagnostic equipment
23. General understanding of testing procedures/efficiency for stoves/ovens
24. Establish ongoing testing protocols
25. Interpret and analyze usage data and communicate information to other decision makers
26. Identify areas that need weatherstripping
27. Know proper materials to be used for caulking
28. Demonstrate how to conduct a basic roof inspection
29. Identify common reasons for water penetration
30. Know routine maintenance tasks for various kinds of roofs
31. Maintain integrity of boundaries between interior conditioned space and attached or underground garages or mechanical rooms

1.4 Installation and Analysis Skills

1. Ability to know the scope of work for a contractors and ensure proper installation
2. Ability to schedule and stage work effectively and efficiently
3. Evaluate the flow of combustion products out of the building
4. Ability to use simple tools to follow flow of combustion air and identify back drafting and spillage
5. Identify tell tale signs of back drafting, spillage, and condensation in the flue
6. Knowledge of indirect, tankless, and sidearm hot water makers
7. Relationship between boiler water aqua stat settings, DHW temp
8. Knowledge of hot water control settings
9. Knowledge of hot water mixing and tempering valves
10. Maintain hot water temperature to meet all relevant health and safety codes
11. Identify and avoid unsafe hot water temperatures

12. Establish a maintenance schedule for building-owned equipment including: trash compactors, central laundry and kitchen facilities, etc.
13. Ensure proper seal/closing of trash chutes
14. Maintain records and logs as appropriate
15. Develop protocols for replacement of appliances
16. Ensure proper maintenance of washer/dryer venting in common areas and in unit
17. Simple maintenance such as caulking/ weather-stripping
18. Materials commonly used as thermal barriers and proper applications
19. Identify materials commonly used as moisture barriers and proper application
20. Distinguish when repair vs. replacement of doors and windows is needed

1.5 Health and Safety

1. Understand health ramifications of product selection
2. Maintain and understand MSD sheets on all products
3. Understand common health issues related to building management practices
4. Identify / correct fall/trip/slip areas in apartments and common areas
5. Understand, measure, and correct light levels
6. Proper use of tools
7. Effectively ask questions to residents regarding building management health considerations
8. Apply air sealing and related tobacco smoke mitigation
9. Develop tobacco smoke response strategy
10. Apply air sealing and related pest mitigation

2. Standards of Reference

All BPI exams are based on a mixture of industry practices, axiomatic¹ concepts, and major standards of references. No singular source exists that could touch upon every aspect for what is considered testable. Conversely, there is no limit to the potential useful material found in print and online.

Multifamily Building Operator

- [Technical Standards for the Multifamily Energy Efficient Building Operator](#)

3. Contact Information

If you have any questions, comments, or concerns regarding the testing knowledge list please contact BPI's Certification Development department at certdev@bpi.org.

¹ 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.