

ENERGUIDE RATING SYSTEM (ERS) V.15 SUPPLEMENTARY STUDY GUIDE

Energy Advisor Exam

Supplementary Study Guide

March 2018



Acknowledgments and Disclaimer

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Introduction

Energy advisors use the EnerGuide Rating System (ERS) to assess the energy performance and savings potential of homes at the design, construction and renovation stages. As part of their duties, energy advisors are required to provide helpful advice to homeowners and builders who want to improve home energy efficiency. Qualified energy advisors must have the necessary knowledge and experience in the following areas:

- › The EnerGuide Rating System;
- › Residential construction practices for low-rise housing, including multi-unit residential buildings (MURBs);
- › Energy efficiency renovation practices;
- › Building science;
- › Basic mathematics, geometry and computer skills;
- › Data-collection requirements;
- › Energy simulation modelling using HOT2000;
- › Good client relations.

To register as an energy advisor under ERS V.15, candidates must meet the following criteria:¹

- 1 Pass the Foundation Level Exam;
- 2 Pass the EnerGuide Rating System V.15 – Energy Advisor Exam;
- 3 Be affiliated with at least one licensed service organization;
- 4 Be registered with Natural Resources Canada by:
 - Passing the Foundation Level Exam and the Energy Advisor Exam;
 - Completing the probationary files to the satisfaction of the service organization's quality assurance specialist;
 - Providing proof of a Criminal Record Check to the service organization manager.

To register to deliver EnerGuide Rating System services for MURBs, the energy advisor must:

- 1 Meet all of the energy advisor requirements listed above;
- 2 Pass the Multi-Unit Residential Building Exam;
- 3 Complete the probationary files for multi-unit residential buildings to the satisfaction of the service organization's quality assurance specialist.

¹ Natural Resources Canada. (2017). "Registration Process for an Energy Advisor: Administrative Procedures" (Version 15.4, pp. 18-20). Canada.

The service organization is responsible for vetting and ensuring the competency of its energy advisors. NRCan recommends a set of basic probationary files. However, if deemed necessary by the service organization, the candidate energy advisor may be required to complete additional files.

NRCan has developed a complete competency profile (please follow [this link](#)²) consisting of a number of learning objectives to guide candidates in preparation for the exam. The contents herein are intended as a supplementary study guide to help candidates assess whether they are ready to pass the EnerGuide Rating System V.15 – Energy Advisor Exam (required for energy advisors and quality assurance specialists); however, it should not be used as a stand-alone resource to prepare for the exam. Candidates should use this supplementary guide once they believe they are sufficiently prepared to pass the exam. In addition to using this guide, candidates are encouraged to read the latest version of the references listed herein and consult the NRCan EnerGuide Rating System V.15 – Energy Advisor Exam Competency Profile available on its [website](#)³.

This study guide focuses on the Energy Advisor Exam process and directs candidates to the appropriate documents needed to prepare for the exam. It also provides practice questions to help candidates understand the types of questions included in the exam.

² <http://www.nrcan.gc.ca/energy/efficiency/housing/new-homes/16631>.

³ <http://www.nrcan.gc.ca/energy/efficiency/housing/new-homes/16631>.

1 The EnerGuide Rating System V.15 – Energy Advisor Exam

The EnerGuide Rating System V.15 – Energy Advisor Exam is designed to evaluate candidates' knowledge of home energy performance assessments and descriptions. The three-hour exam consists of 150 questions. There are four categories and 27 competencies or subcategories, with a total of 220 learning objectives. The four categories are as follows:

- 1 The EnerGuide Rating System;
- 2 HOT2000 Modelling Version 11;
- 3 Administration and Delivery of the EnerGuide Rating System Version 15;
- 4 Quality Assurance of the EnerGuide Rating System Version 15 – General.

1.1 Typical Pitfalls

One of the most common mistakes made by candidates when preparing for the EnerGuide Rating System V.15 – Energy Advisor Exam, especially those who have already delivered an ERS energy rating under previous versions, is assuming that they have already gained all the fundamental knowledge needed to successfully pass the new exam. Energy advisors who deliver the 0-100 ERS are warned that there are significant changes between V.10 and V.15 (see list below). As such, all candidates are encouraged to carefully prepare for the exam. Lack of preparation is the main cause of failure.

Candidates need to master the knowledge required to provide all of the following services:

- › Basic Service;
- › Renovation Upgrade Service;
- › Construction Blower Door Service;
- › Construction Upgrade Service for New Homes.

What follows is a list of the major changes to the ERS standard compared to the former version:

- › A revised scale that uses actual energy units and provides ratings of homes in gigajoules per year;
- › An expanded rating scope to account for space cooling;
- › The EnerGuide Rating now indicates on-site renewable energy contributions;
- › Updated standard operating conditions;
- › Provisions for adjusting electrical base loads and hot water loads for zero-rated homes;
- › Minimized built-in policy-based adjustments to the EnerGuide rating, such as house size or energy source;
- › Several service delivery types are defined.

How to Prepare for the EnerGuide Rating System V.15 – Energy Advisor Exam

As a first step, candidates should read the Candidate Handbook that contains information on:

- › The exam development process;
- › How to prepare for the exam;
- › How to register for and pay fees to take the exam;
- › The exam day procedure;
- › The Candidate Statement of Understanding.

The scope of knowledge required to become a certified energy advisor is wide and covers most elements that influence home energy performance. For this reason, NRCAN provides a list of competency profiles outlining the learning objectives [[File Exchange/EnerGuide Rating System V.15 – Energy Advisor Exam Competency Profiles](#)]⁴ required to study for ERS V.15. These profiles provide candidates with the suggested references for each learning objective.

All learning objectives in these competency profiles are important, although some require particular attention. To help candidates better prepare, NRCAN has identified the most challenging 110 learning objectives which are found in the various competency profiles categories. We suggest that candidates pay special attention when studying these ([File Exchange/Support Doc V.15 exam EAs](#))⁴

To help candidates become familiar with exam content, the [exam website](#)⁵ provides a tutorial and sample quiz that candidates can take after registering at <https://nrcan.ysasecure.com/>. The 15-minute sample quiz includes 15 multiple choice questions similar to the ones that are asked in the Foundation Level Exam and the three EnerGuide Rating System Exams (i.e. ERS V.15 – Energy Advisor Exam, ERS V.15 – Quality Assurance Specialist Exam and Service Organization Manager Exam).

Tips

- 1 Study the documents referenced in the reference section below;
- 2 Read this study guide;
- 3 Take the tutorial quiz and the sample quiz well in advance of the exam;
- 4 Make sure to arrive at the exam venue 30 minutes in advance to get ready;
- 5 To make the best use of the time allowed, bookmark those questions you are uncertain about. When facing uncertainty, candidates should use this bookmark feature and move on to other questions since the uncertain questions might become clearer as they progress through the exam. Candidates may later return to these tougher questions;
- 6 Most importantly, prepare well and get ready!

⁴ <https://fileexchange.nrcan.gc.ca/>. Username = oee_sh_user Password = \$23welcomeU.

⁵ <https://nrcan.ysasecure.com/>.

1.2 Warnings

To become a qualified and effective energy advisor, candidates must achieve all the learning objectives, not only the most challenging. This guide is not designed to reduce the amount of preparation by candidates; rather, it is designed to raise awareness and enhance understanding about the most difficult sections of the exam.

Compared with the previous versions (i.e. 1-100 ERS), the new ERS V.15 contains several changes. To maximize their chances of passing the EnerGuide Rating System V.15 – Energy Advisor Exam, candidates should carefully study the latest versions of relevant documentation.

Remember: Being a 0-100 ERS Energy Advisor does not mean that you can easily pass the EnerGuide Rating System V.15 – Energy Advisor Exam!

1.3 Comments and Error Reporting

Please report any mistakes found in the guide or submit comments to ea.study.guides@cietcanada.com.

2 References

What follows is a list of the essential references to be studied in preparation for the **EnerGuide Rating System V.15 – Energy Advisor Exam**:

- 1 Energy Advisor Exam Competency Profiles;
- 2 EnerGuide Rating System Standard Version 15;
- 3 EnerGuide Rating System Technical Procedures Version 15;
- 4 EnerGuide Rating System HOT2000 User Guide Version 15;
- 5 EnerGuide Rating System Administrative Procedures Version 15;
- 6 EnerGuide Rating System Quality Assurance Procedures Version 15;
- 7 EnerGuide Rating System Electronic File Submission User Guide Version 15.

To obtain the most up-to-date versions of the above documents, candidates should visit the [File Exchange](#)⁴ or contact NRCan. To obtain the login information, please contact NRCan at nrcan.homes-maisons.nrcan@canada.ca.

Appendix I

Practice Questions

This section provides practice questions to help candidates understand the types of questions asked in the Energy Advisor Exam. These questions are not drawn from the exam question deck. They are the author's interpretation of the questions that candidates may encounter and, as such, may differ from actual questions in both format and content.

- 1 Identify the types of systems that can be modelled in the heat/DHW combination screen.
 - A) Propane, gas and oil, and storage tank water heater combo systems (condensing or non-condensing);
 - B) Gas and tankless water heater combo systems without a secondary storage tank (condensing or non-condensing);
 - C) Propane and tankless water heater combo systems with a secondary storage tank (condensing or non-condensing);
 - D) Combo systems using an oil boiler.

- 2 How should the Energy Advisor prepare the HOT2000 file for submission to the service organization?
 - A) The energy advisor models the house in HOT2000, saves the calculations as an "h2k" file and submits the house evaluation file to the energy service organization;
 - B) The energy advisor models the house in HOT2000, saves the calculations as an "hse" file and submits the house evaluation file to the energy service organization;
 - C) The energy advisor models the house in HOT2000 and saves the calculations as an XML file. The homeowner submits the house evaluation file to the energy service organization;
 - D) The energy advisor models the house in HOT2000 and saves the calculations as a TXT file. The homeowner converts the house evaluation file into a Homeowner Information Sheet using the Report Generator and submits it to the energy service organization.

- 3 An energy advisor must be affiliated with a licensed service organization and registered with Natural Resources Canada prior to offering EnerGuide Rating System services. Among the following, which is not relevant to the registration requirements for energy advisor candidates?
 - A) Demonstrate proficiency by passing the Foundation Level Exam and Energy Advisor Exam;
 - B) Provide proof of possession of a home warranty number or its provincial/territorial equivalent to the service organization(s);
 - C) Complete probationary files to the satisfaction of the service organization's quality assurance specialist;
 - D) Provide proof of a Criminal Record Check to the service organization's manager.

- 4 In case of solid-fuel burning equipment, the energy advisor should collect the following information:
 - A) Equipment manufacturer and model, whether the damper is open or closed;
 - B) Equipment type, flue diameter, whether the damper is open or closed;
 - C) Equipment type, flue diameter, and the temperature of exhaust gas;

- D) Equipment type, flue diameter, the temperature of exhaust gas, and the radiation loss level.
- 5 What does *rated annual energy consumption* represent?
- The sum of space heating, space cooling, domestic water heating, distribution of ventilation air (electrical energy consumption only), and electrical base loads;
 - The distribution of ventilation air (electrical energy consumption only) and electrical base loads;
 - The sum of space heating, space cooling, and domestic water heating;
 - None of the above.
- 6 Baseboards, furnaces, boilers and solid-fuel burning appliances may serve as supplementary systems. When this is the case, which data are required to be collected?
- The equipment type, energy source, presence of a pilot, and pilot light energy consumption if available;
 - Equipment type, flue diameter, whether the damper is open or closed, and the number of identically-sized openings (for whole-building MURBs);
 - The equipment type, flue diameter, and the temperature of exhaust gas;
 - Data are not required for this case.
- 7 Skylights, windows within doors, and patio doors should be modelled:
- In the wizard;
 - In the main interface upon exiting the wizard;
 - Both in the wizard and in the main interface upon exiting the wizard;
 - None of the above.
- 8 When modelling a radiant heating system, the modelling requirement(s) to be entered in the radiant heating screen is/are:
- Manufacturer, model, and heating capacity;
 - The effective temperature and percentage of the radiant heated area;
 - The energy factor of radiant heating;
 - The heating capacity and the energy factor of radiant heating.
- 9 The air exchange rate per hour at a forced air pressure difference of 50 Pa is calculated by blower door software based on the airtightness test results using a formula where:
- $Q = C\Delta P$;
 - $Q = C\Delta P^n$;
 - $Q = m\Delta P^c$;
 - $Q = n\Delta P^c$.
- 10 If a motorized vent damper is not an option listed in the Equipment Type drop-down menu (e.g. for an oil furnace with flame retention head or gas furnace with continuous pilot), how should the user modify the HOT2000 default Flue Diameter value?
- Decrease by 25 mm (1 in);
 - Increase by 25 mm (1 in);
 - Increase by 52 mm (2 in);

- D) Do not modify the default value.
- 11 When modelling a heat pump as a ground source heat pump (GSHP), which of the following kinds of information is not required in HOT2000?
- A) The Unit Function by specifying whether the heat pump is used for heating only or both heating and cooling;
 - B) The Central Equipment Type by selecting the equipment type as a central split system, central single package system, or mini-split ductless;
 - C) The Heating/Cooling Efficiency;
 - D) The Temperature Cut-off Type.
- 12 The Personal Information Protection and Electronic Documents Act (PIPEDA) sets out the general rules governing how private-sector organizations collect, use, or disclose personal information in the course of commercial activities across Canada. Among the following statements, which is true?
- A) It also applies to organizations that are not engaged in commercial activity;
 - B) It also applies to personal information of employees of federally regulated works, undertakings, or businesses (e.g. banks, airlines, and telecommunications companies);
 - C) It also applies to organizations that operate entirely within a province with legislation deemed substantially similar to the PIPEDA if personal information does not cross provincial or national borders;
 - D) It does not apply to organizations that operate entirely within a province with legislation deemed substantially similar to the PIPEDA if personal information crosses provincial or national borders.
- 13 For zero-rated homes, the data-collection requirement(s) for dryers are:
- A) Annual energy consumption as displayed on the EnerGuide label;
 - B) Manufacturer name and model number;
 - C) Manufacturer name, model number and annual energy consumption as displayed on the EnerGuide label;
 - D) None of the above.
- 14 How and why should an Energy Advisor create geometry sketches and building plans?
- A) Geometry sketches and building plans are not mandatory and the Energy Advisor can proceed with the EnerGuide Rating System procedure without them;
 - B) Geometry sketches and building plans must be clear, complete and sufficiently detailed in order for a third party to recreate the house geometry calculations;
 - C) Geometry sketches and building plans must be drawn by a third-party specialist to document the house shape for NRCan;
 - D) Geometry sketches and building plans do not need to be extremely detailed because their main purpose is to provide a general idea to a third party about the house geometry.
- 15 How should a skylight shaft wall be modelled in HOT2000 when it is located in a roof assembly whose depth is filled with insulation?
- A) Wall regardless of its slope;

- B) Glass block configuration;
 - C) Window regardless of its slope;
 - D) Can be ignored.
- 16 If the efficiency of a heat pump or air-conditioning unit is unknown, what further data should be exclusively collected?
- A) Unit function;
 - B) Manufacturer and model number;
 - C) Whether or not the basement is cooled;
 - D) Model numbers of both the condenser and evaporator coils of ASHPs and central air conditioners.
- 17 Under which condition should the temperature of cut-off type heat pumps be considered as Restricted?
- A) If the air-source heat pump shuts down when it is not able to meet the full space heating load;
 - B) If the air source heat pump shuts off at a user-defined temperature;
 - C) If interior temperature reaches 72 °F (22 °C);
 - D) If the house mechanical system is equipped with a balanced heat recovery ventilator.
- 18 The ERS official marks should never be used in the following manner:
- A) To suggest that NRCan or any other government body endorses a particular organization, company, or product;
 - B) To associate the ERS official mark or graphic identifier with products or services not within the scope of the NRCan EnerGuide Rating System;
 - C) To disparage the Government of Canada, Natural Resources Canada or any other government body;
 - D) All of the above.
- 19 To take the ERS exams, prospective energy advisors must:
- A) Register to take the relevant exam(s) at a Natural Resources Canada approved test centre, pay exam fees, write the exam(s) in the presence of a Natural Resources Canada approved exam proctor, and achieve a passing grade on said exam(s);
 - B) Register to take the relevant exam(s) at a Service Organization Canada-approved test centre, pay exam fees, write the exam(s) in the presence of a Service Organization Manager-approved exam proctor, and achieve a passing grade on said exam(s);
 - C) Register to take the relevant exam(s) online, write the exam(s), and achieve a passing grade on said exam(s);
 - D) Pay exam fees (no registration is needed), take the exam online, and achieve a passing grade on said exam(s).
- 20 Which of the following is not a data field in the Main House selector screen?
- A) House type;
 - B) Heating system type;
 - C) Ceiling type;

D) Year built.

21 The geometry (footprint) of a house can initially be estimated by HOT2000 by specifying the Width/Depth or Perimeter/Area of the house footprint. How should the Width/Depth or Perimeter/Area be determined?

- A) Width/Depth or Perimeter/Area determined at the interior extremities of the walls surrounding the heated volume;
- B) Width/Depth or Perimeter/Area determined at the exterior extremities of the walls surrounding the heated volume;
- C) Width/Depth or Perimeter/Area determined at the interior extremities of the walls surrounding the heated and unheated volume;
- D) Width/Depth or Perimeter/Area determined at the exterior extremities of the walls surrounding the heated and unheated volume.

22 Which of the following is not a valid domestic hot water system?

- A) Heat pump condensing hot water system;
- B) Oil conventional tank hot water system;
- C) Induced draft gas-fired hot water system;
- D) Tankless propane hot water system.

23 What is the first step that an energy advisor should take to initiate the Renovation Upgrade Service of a house?

- A) Determine potential for energy upgrades including those aligned with the planned work;
- B) Discuss potential renovation plans and any house-related concerns the homeowner may have;
- C) Ensure completeness and accuracy of Basic Service information or perform a Basic Service if it has not been performed;
- D) Model the house and the upgrades in HOT2000 to assess potential reduction in energy consumption.



Answer Key:

- | | | | | |
|-------------|--------------|--------------|--------------|--------------|
| 1. A | 6. A | 11. B | 16. B | 21. B |
| 2. A | 7. B | 12. B | 17. B | 22. A |
| 3. B | 8. B | 13. C | 18. D | 23. C |
| 4. B | 9. B | 14. B | 19. A | |
| 5. A | 10. A | 15. D | 20. B | |

Thank you for having taken the time to peruse this supplementary study guide.

We hope you found this material useful.

We wish you great success!

