

BC Energy Step Code (BCESC) Compliance Competency Framework for Energy Advisors and Energy Modellers of Part 9 Buildings
VERSION 1.2, November 2020

Category/Competency/Learning Objective	Reference Documents	Document Sections
1: Understanding the BC Energy Step Code		
1.1: Demonstrate general knowledge of the purpose of the BC Energy Step Code and how it is implemented		
Summarize the goals and motivations of the BC Energy Step Code.	BC Energy Step Code Handbook for Building Officials	Page 6
Describe the intent of the enclosure-first approach of the BC Energy Step Code.	BC Energy Step Code Handbook for Building Officials	Page 4, 8, 24
Explain the purpose of energy modelling in the BC Energy Step Code.	BC Energy Step Code Handbook for Building Officials	Page 18, 24
Identify which types of Part 9 buildings the BC Energy Step Code compliance process can be, and cannot be used for.	Compliance Manual	Page 3, 4, 5
Define what is meant by net-zero energy building and net-zero energy ready.	BC Energy Step Code: A Best Practices Guide for Local Governments	Page 9
Recognize how the BC Energy Step Code is designed to support industry and local governments prepare of net-zero energy-ready buildings by 2032.	BC Energy Step Code: A Best Practices Guide for Local Governments	Page 12
Explain the implications of using the BC Energy Step Code as a tool to reduce building Greenhouse Gas Emissions.	Implications of the BC Energy Step Code on GHG Emissions	Executive Summary
Demonstrate knowledge of the typical recommended BC Energy Step Code compliance/permitting process for a Part 9 building.	BC Energy Step Code Handbook for Building Officials	Page 12, 13
Identify the key features and benefits of high-performance buildings.	BC Energy Step Code Builder Guide	Page 12
Identify how the BC Energy Step Code aligns with other green-building certification programs.	energystepcode.ca	energystepcode.ca/faq/
Explain how the Passive House Standard can be used by builders to achieve Step 5.	energystepcode.ca	Technical Bulletin No. B19 – 03
Explain how local governments can use administrative requirements to set requirements for builders or energy advisors to submit additional documentation for BC Energy Step Code compliance.	BC Energy Step Code Energy Advisor Training 2020	Common Issues and Errors
1.2: Demonstrate general knowledge of select roles and responsibilities of building officials, energy advisors, energy modellers and builders		
Identify the roles and responsibilities of the building official (and other local government staff) in the BC Energy Step Code compliance review process at the pre-construction, mid-construction and as-built construction phase.	BC Energy Step Code Handbook for Building Officials	Page 18, 19
Identify the roles and responsibilities of the energy advisor/energy modeller in the BC Energy Step Code compliance review process at the pre-construction, mid-construction and as-built construction phase.	BC Energy Step Code Handbook for Building Officials	Page 20
Identify the roles and responsibilities of the builder in the BC Energy Step Code compliance review process at the pre-construction, mid-construction and as-built construction phase.	BC Energy Step Code Handbook for Building Officials	Page 21
Explain the difference in how third-party oversight and quality assurance is applied to the work of energy advisors (EnerGuide Rating System) and energy modellers (9.36.5).	BC Energy Step Code Handbook for Building Officials	Page 18, 20
Explain the differences in qualification, registration or certification requirements between energy advisors (EnerGuide Rating System) and energy modellers (9.36.5).	BC Energy Step Code Handbook for Building Officials	Page 20
1.3: Demonstrate knowledge of select competencies, roles and responsibilities specific to EnerGuide Rating System registered energy advisors		
Identify the core EnerGuide Rating System competencies that registered energy advisors should understand, and the exam that must be passed, prior to providing BC Energy Step Code compliance services.	Natural Resources Canada EnerGuide Rating System— Energy Advisor Exam (House) Competency Profile; Energy Advisor Exam	Full competency profile
Identify the EnerGuide Rating System competencies that registered energy advisor should understand, and exam that must be passed, prior to providing 9.36.6 BC Energy Step Code compliance services on buildings defined as multi-unit residential buildings.	Natural Resources Canada EnerGuide Rating System— Multi-Unit Residential Building (MURB) Exam Competency Profile; MURB Exam	Full competency profile
List the roles and responsibilities of Energy Advisor using the EnerGuide Rating System (ERS).	ERS Administrative Procedures v15.9 (or latest version)	7.2.3
Explain NRCan's timeline for the submission of N-files.	ERS Administrative Procedures v15.9 (or latest version)	7.2.3
Demonstrate knowledge of Energy Advisor obligations within the ERS quality assurance process.	ERS Administrative Procedures v15.9 (or latest version)	7.2.3
Demonstration your knowledge of the major and minor infractions of the EnerGuide Rating System Administrative Procedures.	ERS Administrative Procedures v15.9 (or latest version)	10.2.1
1.4: Demonstrate detailed knowledge of the Step Code requirements and metrics and explain how they are calculated		
Identify the three key performance metrics categories of the BC Energy Step Code.	BC Energy Step Code Handbook for Building Officials	Page 8
Explain how metrics are used to determine Step Code level.	Compliance Manual	Page 7, 8, 43-48
Describe the Step Code metrics and what parts of the building they capture.	BC Energy Step Code Energy Advisor Training 2020	What the Metric?
Explain the meaning of Step 1 enhanced compliance.	energystepcode.ca	Technical Bulletin No. B19 – 02
Identify the difference between the reference house and proposed house.	energystepcode.ca	Technical Bulletin No. B19 – 02
List the metric options available at each step level.	BC Energy Step Code Energy Advisor Training 2020	What the Metric?
Explain how heating degree days changes the performance requirements that must be achieved.	Compliance Manual	Appendix II
Define 'proposed' and 'as-built' house rated energy consumption.	Compliance Manual	Appendix IV 1.a
Define the Reference House rated energy target.	Compliance Manual	Appendix IV 1.b
Describe how to calculate the 'proposed' and 'as-built' house rated energy consumption and reference house rated energy target.	Compliance Manual	Appendix IV 2
Explain why baseloads are not used in Step Code metrics.	BC Energy Step Code Energy Advisor Training 2020	What the Metric?
Define energy intensity and why it is used in the BC Energy Step Code.	BC Energy Step Code Energy Advisor Training 2020	What the Metric?
Define and explain the intent of airtightness testing in the BC Energy Step Code.	BC Energy Step Code Handbook for Building Officials	Page 12, 18

Category/Competency/Learning Objective	Reference Documents	Document Sections
Identify the compliance pathways for building air tightness and the use of whole-building airtightness testing results for complying with Step 1 of the BC Energy Step Code.	BC Energy Step Code Handbook for Building Officials	Page 19
Define air tightness (ACH@50Pa) targets at each step level.	Compliance Manual	Appendix II, Page 43-48
Define Mechanical Energy Use Intensity (MEUI).	Compliance Manual	Appendix V 1
Identify the mechanical equipment that is included in the MEUI metric.	Compliance Manual	Appendix V1
Explain how to manually calculate MEUI.	Compliance Manual	Appendix V 2
Explain why MEUI is disproportionately difficult for small homes to achieve.	BC Energy Step Code Energy Advisor Training 2020	What the Metric?
List the factors that determine the MEUI that needs to be achieved.	BC Energy Step Code Builder Guide	Page 24
Define ERS Rating % Lower Than ERS Reference House.	Compliance Manual	Appendix VI 1
Explain how to manually calculate ERS Rating % Lower Than ERS Reference House.	Compliance Manual	Appendix VI 2
Summarize the difference between the ERS Reference House and the Step Code % Lower than ERS Reference House.	BC Energy Step Code Energy Advisor Training 2020	What the Metric?
Define Thermal Energy Demand Intensity (TEDI).	Compliance Manual	Appendix VII 1
Explain how to manually calculate TEDI.	Compliance Manual	Appendix VII 2
Explain why TEDI is disproportionately difficult to achieve in some locations.	BC Energy Step Code Energy Advisor Training 2020	What the Metric?
Define Adjusted Thermal Energy Demand Intensity (Adjusted TEDI).	Compliance Manual	Appendix VII
Summarize the reason for introducing Adjusted TEDI as a metric option.	Building Safety Standards Branch	Information Bulletin No. B19-08
Explain how to manually calculate Adjusted TEDI.	Compliance Manual	Appendix VII
Explain how to identify the TEDI requirement when using the adjusted TEDI metric.	BC Building Code 2018 (BCBC 2018)	BCBC Table A-9.36.6.3.(4) a
Define the Building Envelope % Improvement over the EnerGuide Reference House metric.	Compliance Manual	Appendix VIII 1
Summarize the reason for introducing % Building Envelope Lower Than EnerGuide Reference House (%BETRH).	Building Safety Standards Branch	Information Bulletin No. B19-08
Explain the formula for % Building Envelope Lower Than EnerGuide Reference House.	Compliance Manual	Appendix VIII 2
Summarize the process for making modifications to the proposed house for calculating the % Building Envelope lower than EnerGuide Reference House.	Compliance Manual	Appendix VIII 3
Identify the mechanicals systems that are included when calculating the %BETRH .	Compliance Manual	Appendix VIII
Know why special mechanical systems are used when calculating the %BETRH.	Compliance Manual	Appendix VIII
Define Peak Thermal Load.	Compliance Manual	Appendix IX 1
Explain the formula for manually calculating Peak Thermal Load.	Compliance Manual	Appendix IX 2
Summarize how the % Building's Conditioned Space Served by Space-Cooling Equipment is determined in the Step Code.	Compliance Manual	Appendix X 1
Explain the formula for determining % Building's Conditioned Space Served by Space-Cooling Equipment.	Compliance Manual	Appendix X 1
Summarize the process for how to define the cooling capacity of a cooling system.	Compliance Manual	Appendix X
Define annual source energy consumption and know where to find the conversion factors for electricity, natural gas, propane, oil, wood.	Compliance Manual	Appendix XI 1
Explain why on-site energy generation is not incorporated into the BC Energy Step Code.	Compliance Manual	Appendix XI 1
1.5: Demonstrate detailed knowledge of the BC Energy Step Code - Part 9 Compliance Report Calculator and Report Generator		
Explain the purpose and intent of the BC Energy Compliance Report (Pre-Construction and As-Built).	BC Energy Step Code Handbook for Building Officials	Page 20
Define the terms used within the Compliance Reports.	Building Safety Standards Branch	Technical Bulletin B18-03
Identify the types of Part 9 buildings that the compliance report calculator can generate metrics for and the types of Part 9 buildings that the compliance report calculator can not be used for.	Compliance Manual	Introduction 1.1
Define what building types can qualify as Non-MURB Ground Orientated Attached Buildings.	Compliance Manual	Introduction 1.1
Summarize the steps involved in using the non-MURB Ground Orientated Attached calculator.	Compliance Manual	Section 6
Identify where the versions of the Compliance Manual can be downloaded and, based on the building permit submission date, which version should be used.	Compliance Manual	Section 2
Identify which version of Hot2000 should be used when producing a Compliance Report.	Compliance Manual	Section 2
Identify whether energy advisors should use imperial or metric units when entering HOT2000 data into Compliance Reports.	Compliance Manual	Section 4
Identify the requirements for who can use the EnerGuide Rating System for producing Compliance Reports and the administrative and technical procedures they must adhere to.	Building Safety Standards Branch	2018 Note A-9.36.6.4.(2)(b); Compliance Manual
Of the 8 tabs in the Excel Compliance Report Calculator identify how many are used to calculate the step code metrics, how many provide supporting information and how many are the reports to be submitted to the Authority Having Jurisdiction.	energystepcode.ca	Compliance Report Calculator and Report Generator
Identify which portions of the Compliance Reports auto fill when populating the Calculator and Report Generator.	Compliance Manual	Section 5
Describe what information must be entered into the Compliance Calculator to determine whether or not 50% Building's Conditioned Space is Served by Space-Cooling Equipment.	Compliance Manual	Appendix X
Describe how Section F of the Compliance Report is optional to the BC Energy Step Code but can be required to be completed and submitted by authorities having jurisdiction.	BC Energy Step Code Energy Advisor Training 2020	Compliance Report User Manual
Define rated green house gas emission and rated green house gas intensity (GHGI) and identify where this information is reported in the Compliance Report.	Compliance Manual	Section 5
1.6: Demonstrate general knowledge of the Mid-Construction Verification Report		
Identify where to access the Mid-Construction Verification Report.	energystepcode.ca	compliance-tools-part9
Explain the purpose of the Mid-Construction Verification Report.	energystepcode.ca	compliance-tools-part9
Explain why a Mid-Construction Verification Report is optional.	energystepcode.ca	compliance-tools-part9

Category/Competency/Learning Objective	Reference Documents	Document Sections
2: The Performance Path of the BC Energy Step Code		
2.1: Demonstrate general knowledge of 9.36.5 modelling		
List the standards that define what software can be used for energy modelling.	BC Building Code 2018	9.36.6.4(1)
Explain the difference in quality assurance provided on between the ERS path and the 9.36.5 path.	energystepcode.ca	Technical Bulletin No. B19-01
Identify and apply the same climate data to both the reference house and the proposed house models.	BCBC 2018	Note A-9.36.5.5(1)
Explain the process for modelling district energy consumption.	<i>Process not yet documented</i>	
Identify and apply the correct temperature set-points for each area of the building.	BCBC 2018	BCBC 9.36.5.4.(5)
Identify the difference between the National Building Code for Buildings (NECB) reference house and a 9.36.5 reference house.	NECB; BC Building Code	
Identify the components of the proposed house model that must be consistent with that of the reference house.	BCBC 2018	9.36.5.12.(2)
Identify all components of a building that should be included in the energy model.	BCBC 2018	BCBC 9.36.5.6(2)
Explain the appropriate methods for modelling in HOT2000's general mode.	Guidelines for Using HOT2000 v.11 to demonstrate compliance with subsection 9.36.5 of the 2015 NBC	
Explain how to use 9.36.5 to achieve Step 1 of the BC Energy Step Code.	energystepcode.ca	Technical Bulletin No. B19 – 02 & No. B19 – 03
Summarize the 9.36.5 compliance path to airtightness testing.	energystepcode.ca	Technical Bulletin No. B19 – 02
Understand and use appropriate timing for an airtightness test.	BCBC 2018	A-9.36.5.10.(11)
2.2: Demonstrate select knowledge of 9.36.6 modelling and EnerGuide Rating System competencies		
Apply the procedures for complete data collection as required by NRCan.	ERS Technical Procedures v15.9 (or latest version)	2.7; 3; 7; Appendix B
Apply the procedures for modelling as required by NRCan.	ERS HOT2000 User Guide v15.9 (or latest version)	7; Appendix C
Recognize the building type as defined by the ERS Technical Procedures and apply the correct modelling procedures.	ERS Technical Procedures v15.9 (or latest version)	3.5.1.9 & 3.5.1.10
Identify when an ERS MURB single-unit model can be used for step code compliance.	<i>No reference at this time</i>	
Identify where dimensions for volume and floor area, wall areas, etc., should be measured from.	ERS Technical Procedures v15.9 (or latest version)	2.7.2
Explain when a Single Family Detached home with a secondary suite is classified as a MURB.	NRCan Bulletin: Houses with Secondary Suites	
Describe how loads and/or gains change when modelling a house with a secondary suite as a MURB.	ERS Standard v15.9 (or latest version)	4.6
Explain how to, convert a Single Family Detached home into a MURB (or a MURB into a Single Family Detached) when using HOT2000.	ERS HOT2000 User Guide v15.9 (or latest version)	7.2.3
Identify what is/is not included in the Building Surface Area and where to find this data for input into the calculator.	Compliance Manual	Section 6.2.3
2.3: Demonstrate knowledge of the 9.36.6 solution for modelling Non-MURB Ground Orientated Attached Buildings		
Apply the procedures for modeling non-MURB Ground Orientated Attached Buildings.	Compliance Manual	Section 6.2
Describe the formulas used in the non-MURB Ground Orientated Attached calculator to generate metrics for the whole building.	Compliance Manual	Section 6
Explain why the ACH adjustment process can be applied to non-MURB Ground Orientated Attached Buildings.	Compliance Manual	Section 6.1, 6.2
Explain when the ACH adjustment process can be used and when it can not be used.	<i>Not clearly defined</i>	
Summarize how the ACH adjustment process can be applied to non-MURB Ground Orientated Attached Buildings.	Compliance Manual	Section 6.1 (b)
Explain the calculation that is used to generate a whole building ACH value when the units are tested separately.	Compliance Manual	Section 6.2
Apply the procedures for entering the adjusted ACH into HOT2000.	BC Energy Step Code Energy Advisor Training 2020	Energy Modelling Demonstration
Describe how the floor area for a townhome building differs between ERS and BCBC.	BC Energy Step Code Energy Advisor Training 2020	Energy Modelling Demonstration
2.4: Demonstrate knowledge of blower door testing procedures		
Describe the differences, if any, between CAN/CGSB-149.10-M86 and ERS As-Operated blower door testing procedures.	ERS Technical Procedures v15.9 (or latest version); BC Building Code; CAN/CGSB-149.10-M86 - 2019	7.4; 9.36.5.10.(11)b
Identify and explain the appropriate timing for an airtightness test.	BCBC 2018	A-9.36.5.10.(11)
Describe the purpose of a guarded blower door test.	CAN/CGSB-149.10-M86	
List the safety protocols when conducting a blower door test.	ERS Technical Procedures v15.9 (or latest version)	7.3
Describe how to apply the procedures to conduct a Blower Door Test using CGSB-149.10-M86.	"Determination of the Airtightness of Building Envelopes by the Fan Depressurization Method" CAN/CGSB-149.10-M86	
Identify the compliance pathway that allows guarded blower door tests.	<i>No reference at this time</i>	
Describe how to conduct multi-zone tests with a single blower door.	ERS Technical Procedures v15.9 (or latest version)	7.6.5 & 7.6.9
Describe how to conduct multi-zone airtightness tests with multiple blower doors.	ERS Technical Procedures v15.9 (or latest version)	7.6.6, 7.6.7, 7.6.8
Describe how to conduct single-zone airtightness tests with multiple blower doors.	ERS Technical Procedures v15.9 (or latest version)	7.6.4
Describe the advantages and disadvantages of a pressurization test compared to a depressurization test.	ERS Technical Procedures v15.9 (or latest version)	7.6.3
Describe how to conduct an exhaust devices depressurization test.	ERS Technical Procedures v15.9 (or latest version)	7.8
Define and explain the different airtightness metrics (ELA, NLA, ACH@Pa, ALR, NLR).	BC Housing - Illustrated Guide to Achieving Airtight Buildings	Page 8,9
Describe the relationship between the flow exponent (n) and the relative size/shape of holes in the air barrier and how this affects ACH@50 Pa.	BC Energy Step Code Energy Advisor Training 2020	Energy Modelling Demonstration
2.5: Demonstrate knowledge of mid-construction airtightness testing		
Identify the best times during the construction process for a mid-construction airtightness test.	BC Housing - Illustrated Guide to Achieving Airtight Buildings	Page 31
Explain why a pressurization test may be a better option for airtightness testing under certain conditions.	BC Housing - Illustrated Guide to Achieving Airtight Buildings	Page 35
Describe common air sealing techniques and determine their appropriate usage.	BC Housing - Illustrated Guide to Achieving Airtight Buildings	Full document
Describe methods to identify locations of air leakage.	BC Housing - Illustrated Guide to Achieving Airtight Buildings	Full document

Category/Competency/Learning Objective	Reference Documents	Document Sections
3: BC Building Code		
3.1: Demonstrate general knowledge of BC Building Code and key code requirements		
Demonstrate general knowledge of B.C.'s building regulatory system	Understanding BC's Building Regulatory System	Full document
Define Authority Having Jurisdiction (AHJ), and how it differs from Local Authority (as used in the Building Act).	What Local Governments Need to Know about the Building Act	18
Define the intent of the BC Building Code and what it sets minimum standards for.	Understanding BC's Building Regulatory System	Page 4
Describe the difference between performance and prescriptive requirements.	Understanding BC's Building Regulatory System	Page 9
Summarize the scope and application of Divisions A, B and C.	BCBC 2018 , Division A	1.3
Identify the criteria for classifying a building as Part 9.	BCBC 2018 , Division A	1.3.3.3
List the general characteristics that differentiate Part 9 and Part 3 Buildings.	Understanding BC's Building Regulatory System	Page 4,5
Explain where terms used in the BC Building Code are defined.	BCBC 2018 , Division A	1.4
Explain where to find details about documents and organizations referenced in the Building Code.	BCBC 2018 , Division B	1.3
Explain how building size is determined.	BCBC 2018 , Division A	1.3.3.4
Explain how buildings height is determined on sloped building sites.	BCBC 2018 , Division A	Note A-1.3.3.4(2).
List the information that must be included on the House Performance Compliance Calculation Report provided by the EA to the Authority Having Jurisdiction	BCBC 2018 , Division C	Article 2.2.8.2.
3.2: Demonstrate knowledge of heat transfer, air leakage and condensation control		
Summarize the scope and application of section 9.25.	BCBC 2018	9.25.1.1
Describe how insulation is to be installed.	BCBC 2018	9.25.2.1; 9.25.2.3; 9.25.2.4; 9.36.2.5
Describe what continuity of the air barrier system means.	BCBC 2018	9.25.3.3; 9.36.2.9
Demonstrate knowledge of how different air barriers are detailed and installed.	BCBC 2018	9.36.2.10
Identify the code required permeance for vapour barrier materials.	BCBC 2018	9.25.4.2
Describe where vapour barriers are to be installed.	BCBC 2018	9.25.4.3 & 9.25.5.2
3.3 Demonstrate knowledge of heating, ventilation and air conditioning		
Demonstrate knowledge of the principal ventilation air systems allowed by the code.	BCBC 2018	9.32.3.4
Determine flow rates for principle ventilation system exhaust.	BCBC 2018	9.32.3.5
Determine if make-up air is required for appliances.	BCBC 2018	9.32.4.1
Differentiate between ventilation air, combustion air, and make-up air.	BCBC 2018	9.32
Define design temperatures.	BCBC 2018	9.33.3.1
3.4: Demonstrate knowledge of section 9.36 of the BC Building Code		
Summarize the scope and application of each subsection of 9.36	BCBC 2018	9.36.1.1; 9.36.2.1; 9.36.3.1; 9.36.4.1; 9.36.5.1; 9.36.6.1
Demonstrate knowledge of where to find definitions for terms used	BCBC 2018	9.36.1.2; 9.36.5.2; & 9.36.6.2
Describe how Section 9.36. is applied to seasonally occupied residential buildings such as cottages or ski cabins.	BCBC 2018	9.36.1.3.(5)(b); & A-9.1.1.1.(1)
List the energy compliance path options available depending on the building's occupancy classification.	BCBC 2018	9.36.1.3; A-9.36.1.3
Define area of conditioned space.	BC Energy Step Code Handbook for Building Officials	Page 12
List the testing standards that can be used to determine the airtightness (ACH@50Pa) of the building.	BCBC 2018	9.36.6.5
Identify the different paths and procedures that may be used to model for step code compliance.	BCBC 2018	9.36.6.4.(2); A-9.36.6.4.(2).(c); & 9.36.6.3(3)
Explain whether prescriptive requirements apply when following performance paths.	BCBC 2018	9.36.1.3
Identify and apply recognized RSI values for common materials.	BCBC 2018	Table A-9.36.2.4.(1)-D; A-9.36.2.4.(1)
Describe requirements for airtightness and the air-barrier systems.	BCBC 2018	9.36.2.9; & 9.36.2.10
List the approaches by which Step 1 of the BC Energy Step Code for Part 9 Buildings achieved.	energystepcode.ca	Bulletin No. B19-01; No. B19-02; No. B19-03
Recognize the builders have the option of using a sliding scale for the TEDI requirements.	BCBC 2018	9.36.6 Tables 9.36.6.3-A thru G; 9.36.6.3.(4); Bulletin No. B19-04

SUPPLEMENTAL: BC Energy Step Code Competencies

Category/Competency/Learning Objective	Reference Documents	Document Sections
4: Building Science		
<i>Note: This framework only provides select building science and construction concept competencies. It is recommended that registered energy advisors and energy modellers complete formal training and testing as a prerequisites for delivery of BC Energy Step Code compliance services. Building Science Reference Documents are not listed, as there is an abundance of resources that are appropriate for these competencies.</i>		
4.1: Demonstrate knowledge of foundation level competencies		
Identify the core construction and building science competencies that EnerGuide Rating System registered energy advisors (and energy modellers) should understand.	Natural Resources Canada EnerGuide Rating System— Foundation Level Exam Competency Profile	
4.2: Demonstrate knowledge of select House-As-A-System (HAAS) principles		
Summarize the principles of the House-as-a-System approach (HAAS) as related to new home construction		
Summarize the relationship between applying HAAS in building construction and avoiding unintended consequences in the construction of high efficiency homes		
Describe the relationship between the HAAS and insulation.		
Describe the relationship between the HAAS and airtightness.		
Describe the relationship between the HAAS and ventilation.		
Explain the potential for indoor air quality issues in airtight homes.		
Describe the relationship between the HAAS and heating and cooling systems.		
Describe the relationship between the HAAS and window and doors.		
Describe how certain design decisions made to reach TEDI requirements may cause occupant discomfort and overheating.		
4.3: Demonstrate knowledge of select building science, building construction, building enclosure and equipment and systems competencies		
Demonstrate knowledge of conventional wood frame construction techniques.		
Demonstrate knowledge of pre-fabricated assemblies, and engineered products.		
Describe the stages of designing and constructing a house.		
Interpret construction drawings.		
Identify the key features of an effective air barrier.		
Describe different air barrier approaches (interior and exterior) and their advantages and disadvantages.		
Explain how condensation forms.		
Describe the ways moisture can move through a building envelope.		
Describe the 3 mechanism of heat transfer and which causes heat to flow through the building envelope.		
In terms of permeability, describe the disadvantages and advantages of using certain types of insulation materials in various locations in assemblies.		
Define long term-thermal resistance (LTTR) and know where to identify where to find the LTTR of insulation products.		
Demonstrate knowledge of what is meant by 'Diminishing Returns' as applied to insulation.		
Describe the disadvantages and advantages of adding insulation to the exterior versus the interior of the building envelope.		
Describe the building envelope.		
Describe the advantages and disadvantages of different heating systems.		
Describe the advantages and disadvantages of different cooling systems.		
Describe the advantages and disadvantages of different ventilation systems.		
List properties of an energy efficient window.		
Explain the factors that can contribute to a home overheating during the summer months.		
4.4 Demonstrate general knowledge of select calculations, definitions, and terminology		
Calculate the effective thermal resistance of building assemblies.		
Calculate areas, volumes, perimeters, and circumferences.		
Describe how to do unit conversions for length, area, volume, temperature, mass, R-value, energy and power.		
Identify which resources to consult to identify how to calculate the dew point of a building assembly.		
Demonstrate knowledge of the heat flow equation and its application to determining the where the dew point is located in an assembly.		
Demonstrate how to find the dew point on a psychometric chart.		
Define design cooling load.		
Define design heat loss.		
Define common energy efficiency ratings used for mechanical equipment and explain how they are calculated (AFUE, HSPF, COP, SEER, UEF).		
Explain Solar Heat Gain Coefficient and its importance in selecting the appropriate window.		
Describe combustion spillage, its causes and implications.		
Describe specific heat, sensible heat and latent heat.		
Describe typical internal heat gain sources.		
Define thermal transmittance.		

Category/Competency/Learning Objective	Reference Documents	Document Sections
Define RSI.		
Define reflectivity.		
Define emissivity.		
Describe thermal bridging and identify thermal bridges.		
Describe renewable energy systems and their properties.		
5: Rebates and Incentives		
5.1: Demonstrate knowledge of rebate and incentives for new construction and the BC Energy Step Code		
Understand where to identify which new construction rebates are available by building type, fuel type an location.	betterhomesbc.ca; bchydro.com; fortisbc.com; https://energystepcode.ca/incentive-programs/	
Understand the application process and terms and conditions for rebates.	Rebate program websites accessed through betterhomesbc.ca	

RESOURCES AND SOURCES

Document Type	Source	Document Name (with link as of November 2020)
Manuals and Documents		
	www.energystepcode.ca	Compliance Manual
		BC Energy Step Code: A Best Practices Guide for Local Governments
		Implications of the BC Energy Step Code on GHG Emissions
		BC Energy Step Code Handbook for Building Officials
		BC Energy Step Code Builder Guide
	www2.gov.bc.ca	BC Housing - Illustrated Guide to Achieving Airtight Buildings
		Understanding BC's Building Regulatory System
		What Local Governments Need to Know about the Building Act
Technical Bulletins		
	www.energystepcode.ca	Technical Bulletin No. B19-01
		Technical Bulletin No. B19 – 02
		Technical Bulletin No. B19 – 03
		Information Bulletin No. B19-08
BCESC Compliance Manual And Calculator		
	www.energystepcode.ca	Instruction Manual for Energy Advisors
		Compliance Report Calculator and Report Generator
EnerGuide Rating System and Natural Resources Canada Documents		
	Natural Resources Canada	EnerGuide Rating System— Energy Advisor Exam (House) Competency Profile (Energy Advisor Exam)
		EnerGuide Rating System— Multi-Unit Residential Building (MURB) Exam Competency Profile (MURB Exam)
		ERS Administrative Procedures v15.9 (or latest version)
		ERS HOT2000 User Guide v15.9 (or latest version)
		NRCan Bulletin: Houses with Secondary Suites
		ERS Standard v15.9 (or latest version)
		Guidelines for Using HOT2000 v.11 to demonstrate compliance with subsection 9.36.5 of the 2015 NBC
Codes and Standards		
	www.publications.gc.ca/site/eng/9.882138/publication.html	"Determination of the Airtightness of Building Envelopes by the Fan Depressurization Method" CAN/CGSB-149.10-M86
	www.bcpublishings.ca/BCPublications	BC Building Code 2018
	www.nrc.canada.ca	National Energy Code of Canada for Buildings 2017
Training Presentations		
	www.energystepcode.ca	BC Energy Step Code Energy Advisor Training 2020