About the NECB

The National Energy Code of Canada for Buildings (NECB) was developed by the National Research Council and Natural Resources Canada as part of the commitment to improving the energy efficiency of Canadian buildings and reducing greenhouse gas emissions. The NECB covers a wide range of building components and systems, including building envelope, electrical, and mechanical systems.

The NECB was adopted as regulation in Alberta on Nov. 1, 2015. Subsequently, a transition phase was initiated and extended to Nov. 1, 2016. This transition phase allows for the industry and the public time to familiarize themselves with the new requirements before the changes are mandatory as of Nov. 1, 2016.

NECB Compliance Timeline

Building Permit applications before Nov. 1, 2016 do not need to demonstrate compliance with the NECB.

Building permits received by Park Enterprises on or after Nov. 1, 2016 must comply with NECB or the Alberta Building Code Section 9.36, as applicable.

How to Comply with the NECB

Unlike Alberta's safety codes, there are several methods that you can choose to demonstrate compliance with the NECB. This is a critical decision for the design team and can affect both submission requirements and team members. The various compliance path types are prescriptive, trade-off, and performance compliance, outlined below.

Prescriptive Path

This path involves following the prescriptive requirements of Sections 3.2, 4.2, 5.2, 6.2 and 7.2 of the NECB. It is typically the simplest compliance path to follow, but may not be appropriate for all building types.

It is important to note that prescriptive path compliance for any part of the NECB requires meeting all requirements in that part. If this is impossible or undesirable, another compliance path should be selected.

Trade-off Path

If you need more flexibility in your design, a trade-off path allows you to trade elements within the same part of the energy code and demonstrate an equivalent level of performance without meeting every prescriptive requirements found in the NECB. For example, if your design calls for more window area than prescribed by the code, you may be able to compensate by improving the insulation in the building

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envelope, or improving the thermal performance of the windows themselves.

Basically, the trade-off path is a calculation to demonstrate that while your proposed design may not exactly meet the prescriptive requirements found in the NECB overall, the amount of energy consumed will be the same or less than the following strict prescriptive compliance.

It is important to note that trade-off path has limitations and rules on how to calculate what may be traded off within each Part. These limitations are found in Sections 3.3, 4.3, 5.3 and 6.3 of the NECB.

Performance Path

For the most design flexibility, you should choose to use a performance path. This includes the detailed envelope trade-off path and building energy performance compliance paths. These approaches are found in Subsection 3.3.4 and Part 8 of the NECB.

For the NECB 2011, you must simply demonstrate that the proposed design will not consume more energy than an equivalent building built to prescriptive requirements using an approved hourly building energy simulation tool. Performance compliance can allow for trade-offs between building systems, and might be the only compliance path available for certain building types.

Compliance Documents

New Residential and Small Business Construction

For new residential and small businesses building permit applications please include the **Submittal Form** and **Trade-Off Report** (if required) as part of your plan submission. A **User Guide** is available to help with the process.

New Commercial and Industrial Construction

For new industrial and commercial building permit applications please include the **NECB Project Summary** as part of your plan submission.

Contact Us

If you have any questions regarding the NECB, please contact us at 403-329-3747 or contact@parkinspections.com

User Guide 9.36 Project Summary Form

Introduction

Introduction Section 9.36 of the Alberta Building Code (ABC) 2014 details new energy efficiency requirements for housing and small buildings. It includes three options for compliance; Prescriptive, Trade-Off, and Performance Compliance.

To facilitate compliance, Park Enterprises provided the 9.36 Project Summary form outlining the requirements and compliance options for ABC 9.36. This guide provides information and direction on how to complete this form. A completed 9.36 Project Summary form is required for all relevant Building Permit applications starting November 01, 2016.

Completing the 9.36 Project Summary Form

Basic Building Information

Regardless of the compliance path chosen, certain information is required for all buildings seeking compliance with ABC 9.36. This information must be completed for all projects and be consistent with the accompanying drawings.

Basic information includes:

Climate Zone _____

Building Area This is as defined in 1.4.1.2 of ABC 2014

Selecting a Compliance Path

Select only one compliance path; multiple compliance paths are not permitted on a single building.

Specific requirements associated with the individual compliance paths are found on the form, and explained in greater detail below

Prescriptive Compliance Path

This section describes the minimum information that must be included for prescriptive compliance. It may take the form of notes or additional drawings. If the proposed assemblies and components meet the required values of 9.36.2 – 9.36.4 you will have demonstrated compliance.

A list of drawing details to illustrate how air barrier and insulation continuity at joints, transitions and changes in assemblies is also included. These details will be specific to the chosen air barrier/insulation system.

Trade-off Path

A second compliance path allows applicants to 'trade-off' building envelope requirements, subject to limitations found in ABC 9.36.2.11. These include;

- Total areas must be the same for both parts of the calculation
- You may only trade-off between assemblies from the building envelope, not HVAC or Hot Water.
- You may only trade opaque for opaque assemblies or transparent for transparent assemblies.
- If you trade windows for windows, then they must be on the same elevation.

Demonstrating compliance under the trade off path requires all the information for prescriptive compliance, with the additional requirements of

- Trade off calculations must be submitted (calculator available upon request)
- Using a hatch, shading, or other means, the trade-off areas must be indicated on the accompanying drawing submission.

Performance Compliance Path

Performance Compliance path employs a computer simulation software or calculations to compare a proposed design with a hypothetical reference building to show that the proposed design will use less energy over the course of an operational year. ABC 9.36.5 outlines the procedures for performing this comparison. The 9.36 Project Summary requires a number of values to be provided in order to allow verification of the model inputs. A brief outline of some of these inputs and their requirements follows:

Reference Model

The reference model must be constructed according to 9.36.5.13. – 9.36.5.16. In the Reference building **Airtightness**, **SHGC**, **Thermal Mass** and **Solar Absorbance** must use values specified in 9.36.5.14. FDWR for the Reference building is based on the

FDWR of the proposed building, according the to the following table;

Buildings Containing 1 or 2 Dwelling Units	
Actual FDWR	FDWR for Reference Model
<17	17
17-22	Match actual FDWR
>22	22
Buildings containing More Than 2 Dwelling units	
Actual FDWR	FDWR for Reference Model
0-40	Match actual FDWR
>40	40

NOTE: For the purposes of the reference building, the area of glazing arrived at above shall be divided equally among the elevations of the building in the model. The following boxes on the form allow you to indicate the areas entered in the model for each elevation.

HVAC System efficiency is to be indicated based on the required efficiency rating from table 9.36.3.10 for the type and size of equipment specified in the proposed design. If the proposed design equipment is not included in the table then the reference house should be based on a gas fired warm air furnace with an efficiency of 92%.

Space Cooling Efficiency if installed shall meet the efficiency value for the relevant type of equipment as found in table 9.36.3.10

Service Water Heater Efficiency shall be indicated as the value shown in table 9.36.4.2 or if appropriate 9.36.5.16 and shall be the same type, size and fuel type as the proposed house.

Ventilation Rate shall be set at the value derived from table 9.32.3.3 based on the number of bedrooms.

Proposed Model

Airtightness for the proposed house is a choice to be made by the designer.

Chosen Airtightness level	Construction Requirements
3.2	Install an Air Barrier System in accordance with 9.25.3
2.5	Install an Air Barrier system in accordance with 9.36.2.10
<2.5	Conduct a blower door test to verify that the specified air leakage rate has been achieved.
NOTE: The results of this test must be supplied to the Building Inspector prior to occupancy. Should the blower door test indicate that the air leakage rate is greater than that specified at permit stage then along with the blower door results, a revised model report using the actual test value will need to be submitted to the Building Inspector prior to occupancy.	

SHGC will be based on the specification of the actual windows proposed for the house and calculated in accordance with 9.36.2.2.

Thermal Mass can be calculated for the proposed house in accordance with 9.36.5.10 or the default value of 0.06 may be used.

Solar Absorbance is held constant between the proposed and reference models and therefore should be 0.4.

FDWR will be entered as the actual value calculated, distributed in the model per the design. The following boxes on the form allow you to indicate the areas for each elevation and should reflect the drawings.

HVAC System Efficiency will be the efficiency of the actual specified equipment.

Space Cooling Efficiency shall be the efficiency of the actual proposed equipment if installed.

Service Water Heater Efficiency will be the efficiency of the actual specified equipment.

Ventilation Rate may be set at a proposed value but may not be less than that derived from table 9.32.3.3 based on the number of bedrooms.

Performance Data Summary
Enter the energy use values generated by the reference and proposed models. Compliance is demonstrated when the Calculated Energy use is equal to or less than the Target Energy Use.

Software
The software used to perform the energy simulation will be detailed here. No specific software package is mandated however whichever software is chosen must have been tested to ANSI/ASHRAE 140 and have any changes or variations made to/within the software listed.

Declaration
Code requires a declaration be made that the calculations have been completed in compliance with all the rules outlined in 9.36.5. In order that the Safety Codes officer can discuss anything arising from the calculations contact information shall be provided for the person who prepared them.

Should the project be particularly complex, or the calculations have significant deficiencies the Safety Codes Officer may request a professional stamp and signature accompany the calculations.

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9.36 Project Summary
Compliance Submittal Report

Park Enterprises Ltd. Requirements for ABC 2014 Division B Section 9.36 Compliance Please consult the 9.36 Project Summary User Guide for guidance in completing this form.		
Project Name:		Building Permit Number (completed internally)
Project Address:		
Applicant:		
Applicant Address:		

Building Information			
Information provided below sets the buildings geometry to establish compliance with the ABC 2014 Division B Section 9.36			
Climate Zone (HDD):		Building Area (m^2):	

Please check the appropriate box to indicate your chosen compliance path (select only one)					
PRESCRIPTIVE		TRADE-OFF		PERFORMANCE	

SUBMIT THE FOLLOWING INFORMATION WITH YOUR APPLICATION BASED ON THE COMPLIANCE PATH CHOSEN

All Compliance Paths

- Identify on the plans any/all assemblies containing heating pipes, cables, or membranes.

- Indicate if a Heat Recovery Ventilator is proposed and, if it is proposed, note the type and efficiency.
- Indicate **effective** Rsi values for all assemblies of the building envelope, both above and below ground (e.g. walls, floors, roofs, windows and doors).
- Provide the calculations used to determine the effective Rsi values (hand calculations or from a software program).
- Indicate the air barrier system being proposed.
- Indicate the type and equipment efficiency of the HVAC system components. Include dampers on intakes and outlets where required.
- Note the type and equipment efficiency of the Service Hot Water system components.
- Note if Hot Water recirculation is proposed, and the thickness and extent of pipe insulation in the Service Hot Water system.

Provide the following architectural details indicating continuity of insulation and air barrier:

Attic hatch, eaves/top of wall, upper floor rim joist, top of basement wall/main floor junction, slab/footing junction, cantilever, bonus room floor over attached garage including ducts, typical outlet box detail, typical window/door jamb.

And, if applicable:

Party wall meeting outside wall, electric meter/vent pipe/duct in insulated wall, skylight shaft walls, slab edges in walkouts & heated slabs, masonry chimneys and fireplaces.

Trade Off Compliance Path

In addition to the information required above, a trade-off calculation, completed in accordance with 9.36.2.11, must be submitted for any trade-off carried out for above ground assemblies.

The areas of assemblies used in the calculation shall be clearly identified on the drawings.

Performance Compliance Path (residential occupancies)											
Information provided below sets the input parameters for the energy simulation used to demonstrate compliance with ABC 2014 Division B Section 9.36 via the performance compliance path.											
Reference Model								**Proposed Model**			
Which direction does the front of the house face as modelled (N, NE, E, SE, S, SW, W, NW):											
Airtightness (ACH @ 50Pa)	**2.5**							Airtightness (ACH @ 50Pa)	**3.2**		**2.5**		**other:**
Solar Heat Gain Co-efficient Glazing (SHGC)	**0.26**							Solar Heat Gain Co-efficient Glazing (SHGC):					
Thermal Mass (MJ/m^2°C)	**0.06**							Thermal Mass (MJ/m^2°C):					
Solar Absorbance	**0.4**							Solar Absorbance:					
FDWR (%)	**17**		**22**		**other:**			FDWR (%):					
Area of Fenestration North Elevation (m^2):								Area of Fenestration North Elevation (m^2):					
Area of Fenestration South Elevation (m^2):								Area of Fenestration South Elevation (m^2):					
Area of Fenestration East Elevation (m^2):								Area of Fenestration East Elevation (m^2):					
Area of Fenestration West Elevation (m^2):								Area of Fenestration West Elevation (m^2):					
HVAC System Efficiency (%):								HVAC System Efficiency (%):					
HVAC System Efficiency (%):								HVAC System Efficiency (%):					
Space Cooling Equipment Efficiency (%):								Space Cooling Equipment Efficiency (%):					
Service Water Heater Efficiency (%):								Service Water Heater Efficiency (%):					
Service Water Heater Efficiency (%):								Service Water Heater Efficiency (%):					
Ventilation Rate (l/s):								Ventilation Rate (l/s):					

NOTE: If the ACH rate entered above for the proposed house is less than 2.5ACH a blower door test will be required prior to occupancy. A note to this effect shall be placed on the drawings.

Performance DataSummary	
Target Energy Use (reference)	Calculated Energy Use (proposed)

Software	
Software Title:	Version:
Software Adaptations Made:	

Please attach the full modelling report generated by an ANSI/ASHRAE 140 compliant software package to this form. Failure to submit the complete report will result in your application being placed on hold.

Declaration				
Please indicate the person responsible for preparing the calculations used to show compliance with ABC 2014 Division B Section 9.36				
Name:				
Representing Firm:				
Contact Information:	email:		tel:	
Address:				
I hereby certify that the calculations submitted were prepared in full accordance with ABC 2014 Division B Section 9.36 and the operating procedures of the software			Signature	

Nothing in this form, or the attached calculations, shall preclude the Safety Codes Officer reviewing this file and requesting an appropriate professional to stamp and sign the submission.