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# Information on Energy Codes

## Energy Codes

Alberta has adopted by regulation the National Energy Code for Buildings (NECB) 2011 edition and energy efficiency requirements for housing and small buildings under section 9.36 of the 2014 Alberta Building Code edition coming into force November 1, 2016.

Improving energy efficiency standards for building construction codes supports Alberta's Climate Change Strategy, which looks to energy efficiency and conservation as one of the three main approaches to reducing greenhouse gas emissions and reducing demand on Alberta's energy resources.

The development of the new Model National Energy Codes started in 2007 at the initiation of the Council of Energy Ministers from across Canada. In 2008, all provincial and territorial governments endorsed the upgrading of the original 1997 Model National Energy Codes by 2012 for both buildings and houses. The development of the new energy efficiency codes has been undertaken by the National Research Council (NRC) with full participation of all provinces and territories.

The NECB and energy efficiency requirements for houses and small buildings in the NBC is the result of an extensive consultation process involving stakeholders from Canadian industry, multiple levels of government (federal, provincial, territorial and municipal), the construction industry, and the general public. It was developed by the Canadian Commission on Building and Fire Codes with technical support and funding provided by NRC and Natural Resources Canada (NRCan) as part of its commitment to improving the energy efficiency of Canadian buildings and reducing greenhouse gas emissions. The energy codes place Canada on a comparable footing with most countries that lead the world in energy efficient building construction.

## Information on Energy Codes

To view detailed information on energy codes, please access the following links:

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## What components of a building will energy efficiency requirements affect?

The Energy Codes will deal with the following building components:

1. **Building Envelope.** Is the separation between the interior and the exterior environments of a building, comprising of its exterior walls, roof, foundation and slab-on-ground.
2. **Lighting.** Includes interior and exterior lighting components and systems connected to the buildings electrical service.
3. **HVAC.** Heating, ventilating and air-conditioning covers items such as ducting and piping, controls, ventilation and related equipment..
4. **Service Water Heating.** Is concerned with systems used for the supply of water for purposes other than space heating.

## **Will the Energy Codes dictate how I must build?**

No, whether considering a large commercial complex or a single family house you will have several approaches to select from to suit the needs of the budget, location and the owner. The approaches can be described as follows:

1. **Performance.** The expected energy performance characteristics for the building are met using a design prepared by a qualified professional. This approach offers the greatest possible design flexibility while still meeting energy efficiency goals.
2. **Performance using Simple Trade-Off.** The expected energy performance characteristics for the various building elements are met, however, within in each building element, i.e. exterior fenestration, it is possible to ‘trade-off’ increased performance in one element for reduced performance in another (i.e. increase wall insulation to allow more less efficient windows). This can be done by the builder without needing to engage a professional designer.
3. **Prescriptive.** The expected energy performance characteristics for the various building elements are met by following the prescribed approach set out in the Code. For example, by following the prescribed level of thermal insulation and amount of windows for the region where the building is to be constructed.

## **How energy efficient will new homes be?**

All Canadian jurisdictions have agreed that the minimum energy efficiency level of homes should be comparable to the EnerGuide 80 standard. Many Albertans are familiar with the Built Green program and EnerGuide 80 is comparable to the Gold level under that program. Establishing the minimum energy efficiency standard for a home does not prevent homebuilders or owners from striving for even greater energy efficiency levels (i.e. a ‘net zero’ home).

## **How much will the Energy Codes add to the cost of a building?**

Complying with the Energy Codes will add something to the initial construction cost of most buildings. However, there are reports suggesting that for houses there will be zero impact on a family’s monthly household budget. This is because the added monthly mortgage charge on a

standard 25 year mortgage will be off-set by the amount saved on the monthly heating bill through reduced consumption. Other factors that affect construction cost include:

1. Some homebuilders are already building to high energy efficiency standards which may mean zero increase for their homes.
2. Size and configuration (i.e. square footage, number of stories, lot orientation).
3. Location in the province, meaning homes in the south can be constructed slightly differently from those in the north to achieve the same level of energy performance.
4. Commodity costs both during construction and once occupied.

## **Will the adoption of Energy Codes result in additional red tape?**

Energy codes are essentially construction codes, like the Alberta Building Code, except they have energy efficiency as an objective. Otherwise they deal with the same building materials and systems as covered by the Building Code. The same provincially trained and certified Safety Codes Officers that issue building permits and inspect construction will be trained and certified to handle Energy Codes. Following an initial transition period the permitting, inspection and approvals process will occur exactly as it does today and should not impose any additional time constraints on those needing permits.

## **What are some of the examples of increased energy efficiency requirements in Alberta's safety codes?**

- Energy-efficiency requirements for lighting, building envelope, insulation, windows, heating, ventilation and air-conditioning and service water heating in buildings and housing. (National energy code for buildings and Alberta building code for houses and small buildings)
- Regulations for conversion of vehicles have been expanded to include such alternative fuels as compressed natural gas and liquefied natural gas. This will help reduce carbon footprint and improve emissions for vehicles. (Gas code)
- Improved enforcement for certification of existing and new equipment/appliances in the oil and gas sectors, resulting in improved efficiency and carbon footprint reduction. (Gas code)
- Elevator devices codes now allow for variable speed escalators and moving walks. When the demand or traffic is not present, device senses this and slow to a neutral speed with minimum energy use. (Elevating devices code)
- Improved energy efficiency of elevating systems that puts previously unused power back into the system for other functions that results in 70 per cent or greater energy efficiency savings (Elevating devices code)
- Updated electrical codes for renewable energy systems, including:
  - o Fuel cell systems - fuel cells create electrical electricity from a chemical reaction.
  - o Wind systems - energy harvested by wind turbines and converted to electrical energy.
  - o Hydrokinetic systems - energy gathered from the flow of water (hydro dams, tidal)
- Boilers and pressure vessels codes, used for containers designed to hold gases or liquids at a pressure substantially different from the outside temperature, are undergoing innovative changes in design for energy efficiency. Oil refineries, mining operations, petrochemical

plants, refrigeration units, power generation, storage of liquefied gases and many other applications are using clean-burning fuel, extraction processes, waste heat recovery or recycling. Alberta is one of the world's largest manufacturers of pressure vessels for use in Alberta and world export. (Pressure vessels code)

- Date modified: 2016-10-21

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