

Efficient homes

Key Points

Homes in Alberta - Climate impacts on homes - Building resilient and efficient homes - Jobs in net-zero homes

What's going on?

Buildings and homes account for nearly one-fifth of our country's greenhouse gas emissions. There are plans in place to reduce the amount of energy and pollution that is generated by buildings and homes right here in Alberta; for example, The City of Calgary has adopted a goal that by 2050, all homes constructed in Calgary will be net zero. Efficient homes and buildings are becoming more and more common and Albertans have choices available to make their homes more energy-efficient and resilient to climate impacts. Changing the way we build and retrofit our homes can provide many benefits, including:

- Increased safety: Retrofitting can help protect your home from extreme weather events such as hailstorms, floods and heat waves.
- Improved comfort: Upgrades to insulation, heating and cooling systems can make your home more comfortable year-round.
- Energy savings: Energy-efficient retrofits can reduce your energy bills, helping you save money in the long run.
- Increased home value: Improving the energy efficiency of your home can also increase its resale value.

Overall, designing our homes to be more climate-resilient is a smart investment that will not only improve our quality of life, but also contribute to a more sustainable future.

What are we doing right now?

Albertans have access to programs and incentives that can help them learn about and make their homes more resilient to climate change and more energy-efficient. This includes:

- [Digital Home Labels](#) – Alberta Ecotrust – Providing a digital energy score to every single-family home in Calgary and Edmonton, partnering with real estate boards to integrate into MLS.
- [Clean Energy Improvement Program](#) – City of Calgary – Flexible financing to help residential property owners with the upfront costs of energy efficiency and renewable energy upgrades. [Lethbridge](#) and [Canmore](#) also offer this program.
- [Zero Emissions Building Exchange – Alberta Ecotrust](#), Smart Sustainable Resilience Infrastructure Association, Calgary Construction Association – Supporting the building industry to achieve net-zero construction through capacity-building, knowledge exchange and building code advocacy.

What can I do?

- Whether you rent or own, you can learn about ways to make your home more energy-efficient. Attend events like eco home tours to learn about alternative sources of heat and power (see below).
- [Find ways to conserve energy around your home.](#) Conserving energy is a great way to lower your energy use and save money on your bills.
- If you're renovating your home, consider upgrading to the most energy-efficient appliances such as [choosing an induction stove](#) over a gas range or fixtures such as [heat pumps](#) instead of air-conditioning units.

Overview

The essential aspects of a resilient home include protection against extreme weather and natural disasters, affordability in the face of rising energy costs, and increased comfort. This means retrofitting existing homes and buildings while also changing the way future homes are constructed. Achieving this requires not only funding, but also skilled labour. With the government's goals and support, the dream of climate-friendly homes can become a reality for all Albertans by 2050. While large-scale changes to energy systems are underway, there are smaller actions that both homeowners and renters can implement right now to see immediate benefits. As funding becomes more readily available, more Albertans will be able to take on larger-scale home projects.

Homes in Alberta

More and more, Albertans are interested in resilient homes that use less energy from lower-carbon sources and are built to withstand extreme weather. For example, [net-zero homes](#) are built to compensate for their greenhouse gas emissions, meaning any emissions used in the building process are offset by how the home functions. Some homes even achieve negative emissions by offsetting beyond their own emissions. By 2050, all homes in Canada will be built or retrofitted to be net zero, a goal that has also been adopted by The City of Calgary.¹ This goal not only brings individual building emissions to net zero, but will reduce the need to draw power from Alberta's increasingly costly energy grid. Albertans are encouraged to talk to their local elected officials on their desires for more government support towards achieving these goals so that we can look forward to the benefits of having net-zero buildings in the province as we face increasing challenges from a changing climate. Not only will these buildings protect against costly energy bills and damage from natural disasters, but they will also provide more comfort in extreme heat and cold.

[Eco-solar home tours](#) are open to the public in June around Calgary, Canmore and Lethbridge each year. You can talk to families that use solar electricity, energy efficiency, heat pump heating, permaculture landscaping and other features in their homes every day.

“Alberta has a very emissions-intensive grid. So, for every home that we're able to net-zero, we take a much higher proportion of emissions off of the grid and out of existence.”

- Peter Darlington, net-zero home renovator in Alberta

¹ [Net-Zero Emissions by 2050 - Canada.ca](#)

Where are we at when it comes to our homes?

- 57% of Canadians say that climate change and the potential for weather-related events are key factors in where they choose to live ([Remax, 2022](#))
- 68% of Albertans say they would invest in technology for their homes (such as sealing/insulating, using renewable energy, high-efficiency appliances, etc.) to reduce their month-to-month fuel costs ([Leger, 2022](#))
- 65% of Calgarians are concerned about high energy consumption in existing buildings and homes ([Zinctank, 2021](#))

Climate impacts on homes

Homes in Alberta have [already seen the effects](#) of flooding, extreme heat, damaging hailstorms and more. These extremes will happen more often and at bigger magnitudes in Alberta's future. Not only do homes face physical damage, but the air we breathe outdoors is also changing. Factors such as forest-fire smoke, increased pollen and urban air pollution can all reduce air quality in our environment. Building our homes to minimize exposure to environmental health risks, and keeping our indoor air cleaner, can reduce the possibility of air quality-related illnesses. To protect ourselves and our families, homes need to be safe and able to withstand this new climate norm. For example, more efficient, highly insulated homes allow us to easily regulate indoor temperature, regardless of outdoor temperature fluctuations.

“Approximately six per cent of Canada’s housing market is at risk of a one-in-100-year flood event and has been classified as essentially uninsurable. That number will only increase as we continue to build homes in flood plains and if we don’t fix our diversified infrastructure (...) Even homes located outside the flood plains are still at risk of flooding.”

- Kathryn Bakos, Director of Climate Finance and Science at the Intact Centre on Climate Adaptation ([Remax, 2022](#))

Building resilient and efficient homes

Most of the homes that will exist in 2050 will be homes that exist now. If we want climate-friendly communities, building new, efficient homes is only part of the solution. Retrofitting existing homes will be the key to net-zero living. Not only does retrofitting your home contribute to a lower or zero-carbon society, it can improve quality of life inside your home by improving its resilience against increasingly harsher climates. Net-zero homes are more comfortable; more efficient and, therefore, cheaper to run; quieter; and healthier than the average home that is not built as net zero. While it is not practical for everyone to switch to net zero immediately, we can take smaller steps to making our home a more-comfortable and healthier place to live today, while keeping a net-zero end goal in mind for the future.

“Three hundred and sixty-five days a year, it’s a very comfortable home to live in. It costs very little to operate and it has virtually no emissions associated with its operation.”

- Peter Darlington, net-zero home renovator in Alberta

If you're renovating or updating your home, consider net-zero or higher-efficiency options. For reliable information on converting your home into a 100% net-zero home, seek advice from an [energy auditor](#) who can provide you with information specific to the home you live in. Smaller steps to make your home more efficient and resilient can be found at [Climate Resilient Home](#).

What if you rent? What can you do?

If you are a renter, you are not responsible for the maintenance of the building you live in, but you can still help make your building more efficient. Minimizing energy loss in your apartment or home helps you save on energy costs and live more comfortably. Take a look at [A Guide for Renting and Creating Lower Cost Energy Efficient Apartments and Homes](#) for more information about what to look for in rented properties and how you can integrate higher energy-efficiency solutions in your rental.

For both renters and homeowners, how we use energy is an important component of the conversation. Being more efficient with the energy we consume will drastically reduce energy costs and emissions, regardless of the energy source. In homes, we can reduce energy consumption and lower energy costs with simple, [free solutions](#) such as:

- Be mindful of when and how you use lighting;
- Keep heating/cooling systems at optimal temperatures only when you are home, using windows seasonally, and fans instead of air-conditioners;
- Wash your clothes in cold water and air-dry them; dryers consume a great deal of energy; and
- Use smaller appliances when larger ones aren't necessary (i.e., toaster ovens) and unplug unused items from electrical outlets.

Making changes to your home that increase its efficiency also increases its value, decreases energy costs and makes your home more comfortable. Click the links to see how homeowners can take action for change to prove that [any home can be more efficient](#) and other [simple switches that can save you money for free](#).

The impacts of climate on homes does not affect the population equally, as evidence shows predominantly racialized communities face worse health outcomes primarily from increased exposure to environmental impacts like heat waves.² Across Canada, there are higher rates of Indigenous populations living in inadequate housing, making them more vulnerable to the effects of climate change.³ Because of this, affordability and accessibility of climate-resilient housing must be a priority. It's important to acknowledge that net-zero home retrofitting is not accessible for all people, and it also has potential to be a bigger-picture solution through increased government financial support of local initiatives. Find [resources](#) to help eligible homeowners and Indigenous-led groups find funding for projects that benefit homes or communities below.

² [Environmental Racism and the Struggle for Change in Canadian Law](#)

³ [Inadequate Housing and Crowded Living Conditions - #3 of 8 Key Issues](#)

Jobs in net-zero homes

The job market in net-zero homes is growing as demand for higher efficiency and net-zero homes grows. There is a growing need for clean-energy specialists who can provide expertise to people who want to build or retrofit homes, from construction to the installation of solar panels and heat pumps, and much more. While there's a growing opportunity for individuals entering the workforce to specialize in the field of clean energy, those already in the workforce have sought-after transferable skills and experience.

Montana First Nation and Community Solar

“As their oil wells began to dry up, the small community of Montana First Nation was faced with an unemployment crisis. The Nation founded Green Arrow Corp. Akamihk, Western Canada’s first Indigenous-owned and operated community solar energy company. Green Arrow’s team of trained community members is now installing solar panels across all of Alberta.

Vickie Wetchie, Montana First Nation member and general manager of Green Arrow describes the benefits that the community has experienced since they launched their solar company in 2012. The economic benefits — local employment, community revenue and power savings — have been the primary motivators for pursuing this energy development. There are now dozens of community members trained as skilled labourers in solar installation and maintenance.”

Source: Prairie Climate Centre



Recap

Net-zero homes and buildings are a major opportunity to completely eliminate emissions from these sources. By producing their own energy, they also reduce the need to pull primarily fossil fuel-based energy from Alberta’s energy grid, which is costly. They can also protect us from Alberta’s changing climate by keeping us comfortable and providing fresh, clean air, even when extreme temperature or air-quality statements are issued. On a smaller scale, even the simplest modifications to a home can make it more-efficient and comfortable. As home updates are regularly needed, achieving a high-efficiency zero-emissions home is a reality that all of us can be a part of whether it’s starting with smaller solutions or completing large renovations.

Resources from local organizations that support learning and action on climate-ready homes

Resource	Organization	Audience	Description
Canada Greener Homes Initiative	Government of Canada	Homeowners	Grants from \$125 to \$5,000 to get a part of your costs back for eligible home retrofits.
Climate-Ready Home	City of Calgary	Homeowners, renters	This guide covers choices you can make during a renovation or construction project, or during home

Guide			maintenance, to make your home more resilient to climate change.
Change Homes for Climate Guide	City of Edmonton	Home and condo buyers	An easy-to-follow checklist for single-family home buyers that contains the important questions you need to ask to ensure an energy-efficient and sustainable home.
Net Zero Homes	Canadian Home Builders Association	Homeowners, builders, renovators	This guide includes information on net-zero homes and a directory of qualified net-zero builders and renovators.
Green Calgary Tip sheets	Green Calgary	General public	Guides, tip sheets and resources for a greener home.

[Find more resources here](#)