

Climate change in Alberta

Key points

What is climate change? - Climate change in Alberta – World views and climate change - Adaptation and mitigation

What's going on:

Albertans are already experiencing the effects of climate change, with hotter summers, colder winters, more frequent hailstorms and smoke from wildfires. In order to stop and reverse climate change, the Government of Canada has signed an [international agreement](#) to reduce Canada's emissions significantly by 2030. To meet these goals in the next seven years, we have to take actions to reduce the amount of carbon pollution we produce. This means we can expect to see some changes to the ways we move around our communities, heat and power our homes, how we design our neighbourhoods, and where we get our food.

What are we doing right now?

There are many policies, programs and actions in place moving Alberta towards a low-carbon future. These include:

- Cities and towns addressing climate change through [planning and policy](#);
- Diversifying our energy sources and creating [new jobs for a low-carbon economy](#); and
- Local groups and organizations coming together to launch [programs and initiatives that help take climate action](#).

What can I do?

You can take action in your everyday life in ways both big and small. For example:

- Make changes to your home to make it more energy-efficient (for example, weatherproofing or even retrofitting your home to use alternative forms of energy);
- Support policies and programs that reduce our dependence on fossil fuels and help us cut pollution;
- Be aware of the resources we use and take steps to use less. For example, planting a drought-resistant garden or being mindful of the electronics and lights we use; and
- Learn more about climate change and the actions we can all take (check out the resources linked throughout this module).

Overview

While climate change is a global issue, it has local impacts that touch all levels of our lives. Climate change is caused by an increase in pollutants in the air that can come from sources such as burning oil, gas and coal. This pollution stays in the atmosphere for thousands of years, creating a thickening heat-trapping blanket. This trapped heat leads to a variety of climate consequences we're already experiencing. Across the province, Albertans are seeing and feeling the effects of extreme weather driven by climate change. It impacts all aspects of our lives including [our health](#), [our economy](#), our community safety, our energy supply and nature around us. Extreme weather and natural disasters are happening more frequently. For example,

heatwaves are now longer, hotter and more frequent. Wildfires burn larger areas and their season has expanded. Flooding and hailstorms are more frequent and severe.

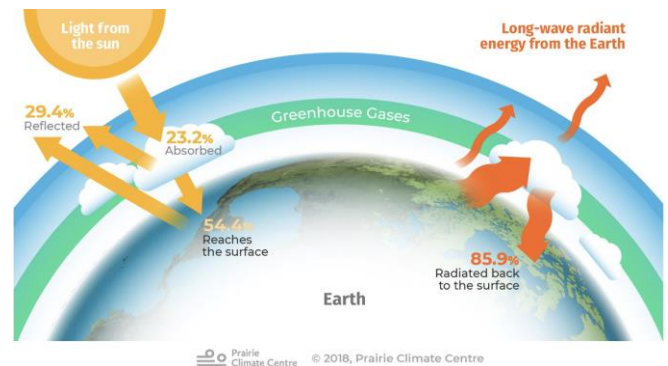
What do Albertans think about climate change?

Albertans (similar to most Canadians) are increasingly concerned about climate; they make sense of climate change via weather events such as hail, heat, drought, fire and smoke.

- 62% of Albertans think climate change is an emerging challenge that we need to address ([Abacus, 2021](#))
- 65% of Albertans believe climate change is extremely serious (18%), very serious (22%) or serious (25%) compared to the rest of Canada (76%) ([Abacus, 2020](#))
- 62% of Albertans think more should be done to address climate change ([Janet Brown Opinion Research, 2022](#))
- 68% of Albertans have personally experienced the effects of climate change to some degree ([Abacus, 2019](#))

What is climate change?

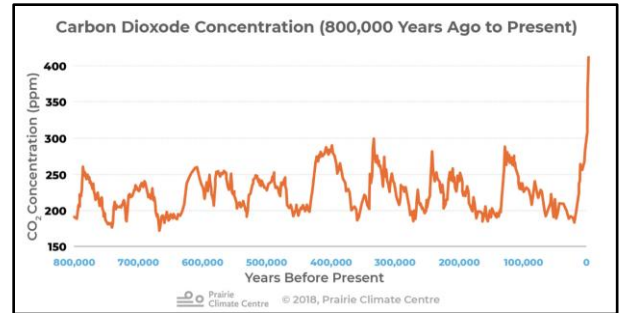
Though there are many misconceptions, real climate science is not up for debate. More than 99% of climate scientists agree on the basic facts about climate change: it's real, it's human-caused, it's harming people now, but it's solvable. When we burn oil, gas and coal, we release carbon pollution into the atmosphere. The more fossil fuels we burn, the more carbon pollution accumulates — some scientists explain this effect as a heat-trapping carbon blanket. The natural sources that clean our atmosphere (such as soils and forests) can't keep up. Many of these pollutants are called greenhouse gases and they influence how energy from the sun enters, leaves or stays in the Earth's system.



While we see natural fluctuations in the history of Earth's climate, in the last few decades we have seen more significant changes in the amount of carbon in the atmosphere than previously experienced on the planet. The heat from sunlight that warms our planet naturally tries to escape back to space, but, because our planet has an atmosphere containing greenhouse gases — especially carbon dioxide, methane and water vapour — some of that heat is trapped by the atmosphere. This effect has a huge influence on our planet. Earth's average overall temperature is about 15°C. If our planet didn't have its atmosphere to retain some of the sun's

energy, Earth's average temperature would be more like -18°C, which is much too cold to sustain life as we know it.¹

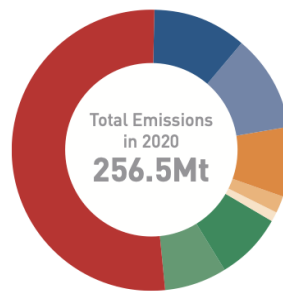
The production of oil and gas accounts for most of Alberta's total greenhouse gas emissions, nearly double the national average.² The next highest-emitting industries are electricity-generation, transportation and agriculture, respectively.



Climate change in Alberta

In Alberta, climate change is already happening. These extremes will continue to happen and become more frequent. Some ways that we can expect to see climate change in Alberta are:

- Shorter, [warming winters](#) with less snowpack. Less snowpack leads to less melting snow in the spring and summer, which decreases the ground moisture content and increases drought.
- Summers with more [heatwaves](#) and [extreme heat](#).
- [Hotter summers](#) and drought lead to an increased risk of wildfires and poor air quality from wildfire smoke.
- Warmer air with increased moisture causes bigger, [more-intense rainfall events](#), including hailstorms. Following a drought, soils are slow to absorb intense amounts of rainfall, leading to flooding and flash-flooding.



Alberta's GHG Emissions Profile (Mt CO₂e) 2020 Data

- ▶ **Oil and Gas** 132.8Mt (52%)
- ▶ **Transport** 28.1Mt (11%)
- ▶ **Electricity** 29.3Mt (11%)
- ▶ **Agriculture** 19.4Mt (8%)
- ▶ **Buildings** 20.7Mt (8%)
- ▶ **Heavy Industry*** 17.7Mt (7%)
- ▶ **Waste** 5.3Mt (2%)
- ▶ **Light Manufacturing, Construction, and Forest Resources** 2.8Mt (1%)

Figure 1: Alberta's GHG Emissions Profile per industry based on Canada's 2020 National GHG Inventory Data

Check out [this video](#) from Meteorologist Christy Climenhaga of CBC News to see how climate is impacting the prairie provinces.

World views and climate change

Post-contact society has been largely shaped around a Western world view. Within this world view, we see ecosystems simply as "resources" that can be owned and controlled. By contrast, Indigenous peoples have respectfully lived with the natural world and have a deep connection to the land, water and ecosystems that are central to their cultures, languages and livelihoods. Through intergenerational experiences and observations, Indigenous peoples were among the first to notice climate change and develop critical knowledge for navigating and adapting to it.

¹ ["Climate Change: the Greenhouse Effect"](#)

² <https://www.eralberta.ca/wp-content/uploads/2022/08/ERA-TechnologyRoadmap2022.pdf>

Visit [Climate Atlas](#) to read more about how [Indigenous Knowledges](#) are necessary to understand climate change and take climate action.

[Indigenous Climate Action](#): Community-based solutions rooted in decolonization

“Real climate solutions are rooted in a return to the land — a return to and of the land — and are rooted in decolonization,” says Eriel Deranger, executive director of Indigenous Climate Action (ICA) and a member of the Athabasca Chipewyan First Nation. ICA is a network of Indigenous peoples framing the ideas and actions regarding climate change in traditional knowledge and community-based solutions. These grassroots actions, Eriel explains, will support the transition to renewable energy while also ensuring social and environmental justice by maintaining and strengthening Indigenous peoples’ connections to language, land and culture.”



Source: *Prairie Climate Centre*

[Mitigation and adaptation](#)

Climate-mitigation and climate-adaptation are two different strategies for addressing the impacts of climate change.

Climate-*mitigation* refers to actions taken to reduce or prevent the emission of greenhouse gases, which are the main cause of climate change. These actions can include things like using renewable energy sources such as solar and wind power instead of fossil fuels, increasing energy efficiency in our homes, and supporting policies that reduce our dependence on fossil fuels and seek to reduce greenhouse gas emissions.

Climate-*adaptation*, on the other hand, refers to actions taken to prepare for and adjust to the impacts of climate change that are already happening, or are projected to happen. These actions can include things like weatherproofing our homes, improving water management in our gardens to cope with drought or planting drought-resistant crops. The goal of adaptation is to reduce the negative impacts of climate change and make communities and ecosystems more resilient.

How are Alberta municipalities acting on climate change?

There are 17 municipalities across Alberta that have energy or environmental plans in place with their own climate-mitigation and adaptation strategies. These plans help outline policies and strategies that help protect the environment, support community health and increase resilience. In southern Alberta, these include:

- [City of Calgary](#)
- [Town of Banff](#)

- [Town of Canmore](#)
- [Town of Cochrane](#)
- [Town of Okotoks](#)
- [Town of Innisfail](#)

Want to see your town on the list? [MCCAC](#) can help provide funding and create a plan!

Recap

Alberta is already seeing changes in its climate as a result of increased greenhouse gas emissions. Increases in temperatures and unpredictable precipitation patterns are going to affect the way we live, work and thrive as a province in multiple ways.

Resources from local organizations that support learning and action on climate change			
Resource	Organization	Audience	Description
Climate Game Changers	CPAWS	Corporate, community groups, educators, students	Climate Game Changers is a “choose your own adventure”- interactive tool kit to help you better understand climate impacts, solutions and everyday actions.
A Climate of Change series	Calgary Climate Hub	General public	Recordings of a monthly web video series that take a deep dive into the latest issues and opportunities around taking climate action in Calgary.
ACEE K-12 Resource Hub	Alberta Council for Environmental Education	Teachers and Educators	The Resource Hub is your one-stop tool for finding new resources, programs, professional development and grants to support environmental and energy education in your classroom.
Alberta’s ART program	Climate West	Corporate Professionals	The intent of this program is to help professionals working in Alberta to develop a basic awareness of climate-change adaptation and build capacity to integrate adaptation into their professional practice.

[Find more resources here.](#)

See it in the news

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- Thomas, B. T. (2023, January 31). Calgary launches program to help homeowners finance clean energy upgrades. *Calgary Herald*. <https://calgaryherald.com/news/local-news/clean-energy-improvement-program-help-homeowners-finance-clean-energy-upgrades>