Preparing Albertans for Climate Change (PDF)

MOBILIZING ALBERTA
Building Capacity for Climate Action

This course features a series of videos and resources that explore the impacts of climate change on our energy systems, communities, transportation, food systems, and homes, while also offering actionable pathways for climate engagement.

Each module takes approximately 45-60 minutes to complete. Participants have 14 days from registration to finish the course and earn their certificate. For any questions or comments, please reach out to mobilizing@ucalgary.ca.

This course was developed through a partnership among Re.Climate, the Prairie Climate Centre at the University of Winnipeg, and the University of Calgary's Office of Sustainability. Dr. Nadia Delanoy (Werklund School of Education) led the development of the assessment for the e-course. The course developers wish to acknowledge and thank the individuals and organizations who contributed to the development of this course and its materials.

We also wish to honour the lasting stewardship of Indigenous peoples, whose knowledge and care for the lands we inhabit provide invaluable insights, often overlooked, in addressing climate change. Their perspectives remind us of the interconnectedness required for meaningful, respectful climate action.

CLIMATE CHANGE IN ALBERTA

DIVERSIFYING ENERGY

RESILIENT COMMUNITIES

TRANSPORTATION CHOICES

- Overview
- Transportation Trends and Benefits
- Active Transportation
- Electrified Transportation
- Jobs in Transformed Transportation
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EFFICIENT HOMES

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ADDITIONAL PROGRAMS, PROJECTS AND EDUCATIONAL RESOURCES

Talking Climate Toolkit for Community Leaders

Full List of Resources to Support Continued Learning and Action

Overview

Climate Change in Alberta

Learning objective: This module introduces climate change in Alberta. Learners will identify the major causes of climate change, the major impacts of climate change in Alberta and the major solution pathways to address climate change in Alberta.

Climate Change: What's Happening and How You

Can Help

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. To stop and reverse climate change, the Government of Canada has signed an international agreement to reduce Canada's fossil fuel pollution significantly by 2030. To meet these goals in time, we have to take actions to reduce the amount of toxic air and 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).

CONTINUE

How Climate Change Affects Us

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 unnatural 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.

More and more frequently, climate change events have become a constant feature in the news. In this Global News video, survivors share their experiences with extreme weather events and experts weigh in on the link between climate change and wildfires.

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.

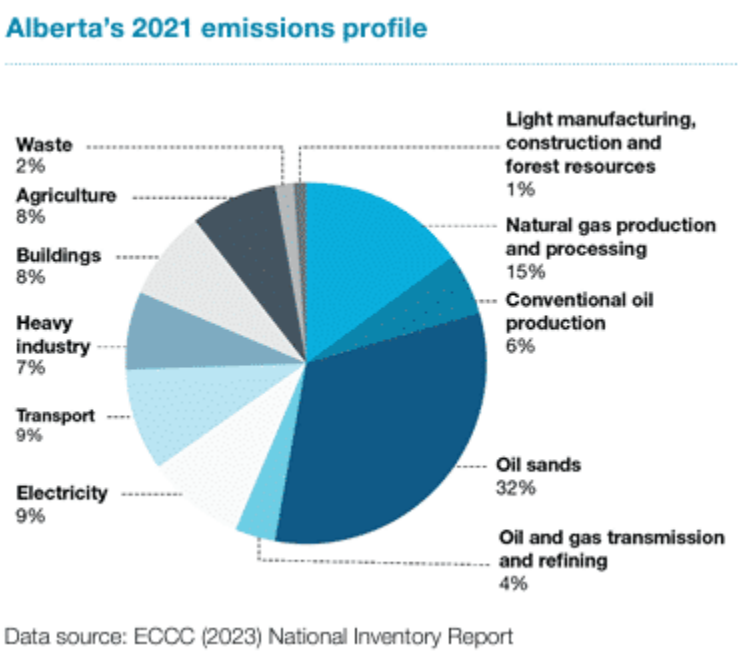
- 67% of Albertans believe climate change poses a severe threat to the planet (Pollara Strategic Insights, 2024)
- 60% of Albertans are worried about climate change and its effects on extreme weather and disasters (First OnSite, 2024)
- 64% of Albertans are very concerned or concerned about climate change (Abacus, 2023).

CONTINUE

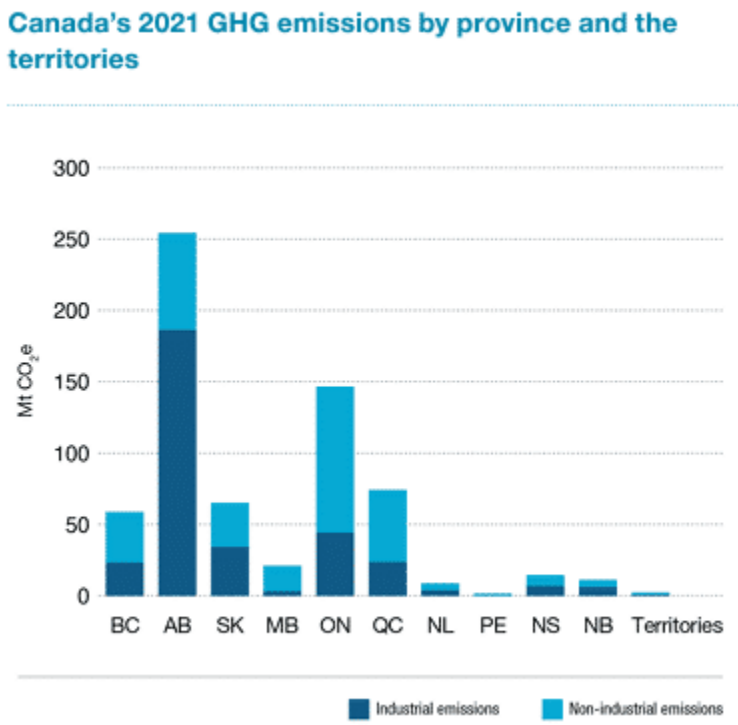
What is Climate Change?

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 heat-trapping 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.

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



Alberta's Carbon Emissions Profile per industry based on Canada's National GHG Inventory Data (2023)



Canada's 2021 GHG emissions by province and the territories (2023)

Climate Change in Alberta

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

DRIER WINTERS | HOTTER SUMMERS | BIGGER STORMS

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.

This image shows snow settling near Water Valley. Alberta has experienced several dry winters in recent years with some regions experiencing once in 50-year lows and province-wide water shortages. Photo credit: Jeff McIntosh, the Canadian Press via AP.

DRIER WINTERS | HOTTER SUMMERS | BIGGER STORMS

Hotter summers and drought lead to an increased risk of wildfires and poor air quality from wildfire smoke. We can expect to have summers with more heatwaves and extreme heat.

This image shows a community cooling station set up by the Salvation Army for Calgary residents. Calgary has been increasingly affected by heat domes in the summer, with record-breaking high temperatures that stick around for days. Prolonged exposure to extreme heat is dangerous for everyone, but especially for vulnerable populations like seniors and people experiencing homelessness. Photo credit: Jeff McIntosh, the Canadian Press via AP.

DRIER WINTERS | HOTTER SUMMERS | BIGGER STORMS

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.

In this image, Red Deer residents are cleaning up after a massive storm battered the city with hail and wind gusts of up to 110 km/h. Photo credit: Jason Franson, The Canadian Press via AP.

Visit **Climatedata.ca** to learn more about climate science and access community-specific data showing how climate change will impact communities across Alberta and Canada.

Climate Change in the News

CBC CBC

Fire, floods, and heat: Alberta saw record-setting weather events in 2023 | CBC News

Fire, floods, and heat: Alberta saw record-setting weather events in 2023 | CBC News

Albertans witnessed a year of extreme, record-setting climate events in 2023 - from heat, to unrelenting drought, to floods - and experts say climate change was one of the leading factors.

READ MORE CBC >

CONTINUE

Worldviews and Climate Change

As you read this section on worldviews, consider what similarities and differences these worldviews share with your own experiences.

Different Ways of Knowing: Indigenous Perspectives vs. Western Approaches

Post-contact society has been largely shaped around a Western worldview. Within this worldview, 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.

Visit Climate Atlas to read more about how Indigenous Knowledges are necessary to understand climate change and take climate action.

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.

CONTINUE

Addressing Climate Change: Mitigation and Adaptation

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

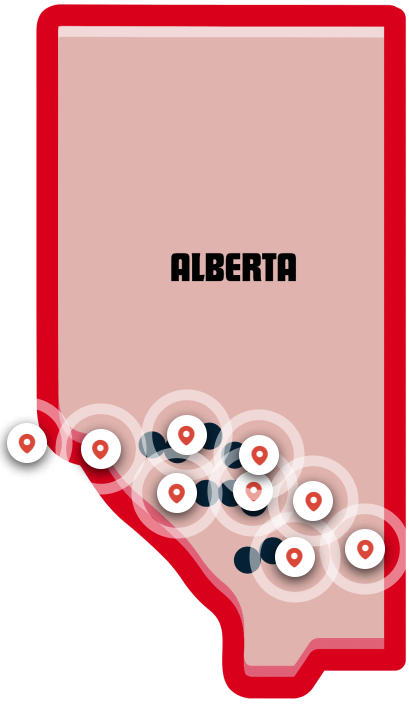
Climate mitigation refers to actions taken to reduce or prevent the emission of carbon polluting gases, which are the main cause of climate change. These actions can include things like using renewable energy sources such as solar and wind power instead of fossil fuels, increasing energy efficiency in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

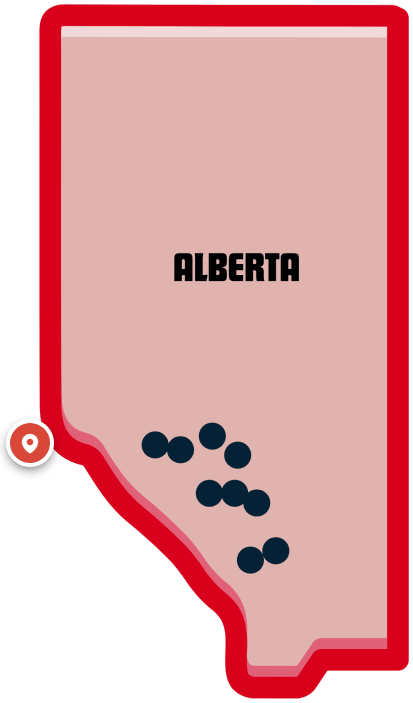
Climate adaptation, on the other hand, refers to actions taken to prepare for and adjust to the impacts of climate change that are already happening, or are projected to happen. These actions can include things like weatherproofing our homes, improving water management in our gardens to cope with drought 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 to unnatural disasters.

How are Alberta Municipalities Acting on Climate Change?

There are 30 municipalities across Alberta that have energy or environmental plans in place with their own climate-mitigation and adaptation strategies. These

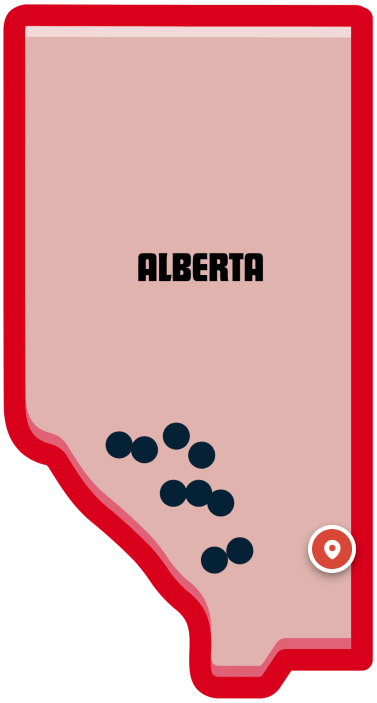
plans help outline policies and strategies that help protect the environment, support community health and increase resilience. In southern Alberta, these include:





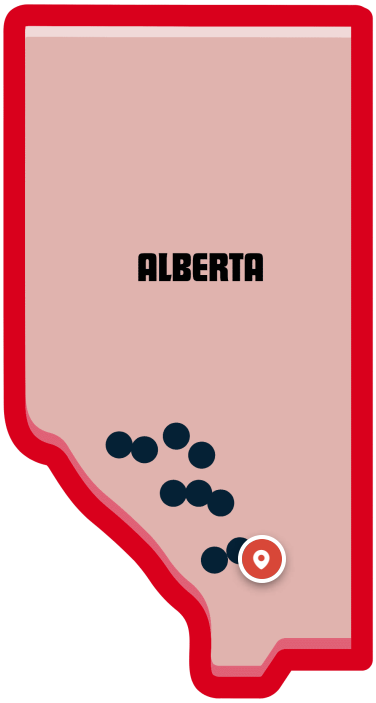
Banff Environmental Master Plan

"The Town of Banff strives to be a model environmental community, adopting and implementing innovative programs to protect and enhance the natural environment. The development of an Environmental Master Plan will create a 10-year road map to a sustainable future for our community, fulfilling one of the priorities of the Town's Strategic Plan. "
Check it out



Lethbridge Climate Adaptation Plan

"The Climate Adaptation Strategy and Action Plan" identifies ways we can better weatherproof our assets, services, and environment for extreme weather and climate change."
Check it out



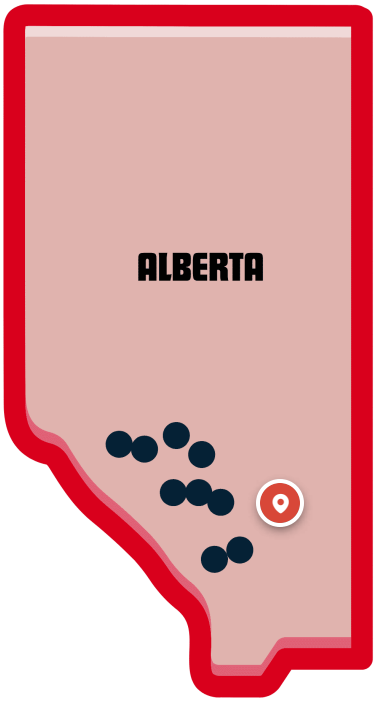
Pincher Creek Climate Risk Assessment & Adaptation Plan

"This Plan provides a climate resilience and adaptation roadmap for the Pincher Creek region. It was developed following a participatory approach to climate adaptation planning and supports the Town and Municipal District (MD) of Pincher Creek to better understand the climate change risks facing residents, the economy, natural environment, and infrastructure in the region, and outlines a robust plan to adapt to these risks. Implementation of this Plan has tremendous potential to make the Pincher Creek region, economy and way of life more resilient to weather disruptions and stress, and healthier and safer for residents, now and in the future."
Check it out

Resilient Okotoks: Climate Action Plan 2021-2033

"The Town has created this Climate Action Plan to guide Okotoks on the course to this desired future. It has been designed to meet the Town of Okotoks' target of achieving carbon neutrality by 2050, while also making the community more resilient and a better place to live. It establishes a detailed pathway to 2030 with guidance to 2050, while highlighting strategies that will help move the community forward for many years to come."

Check it out



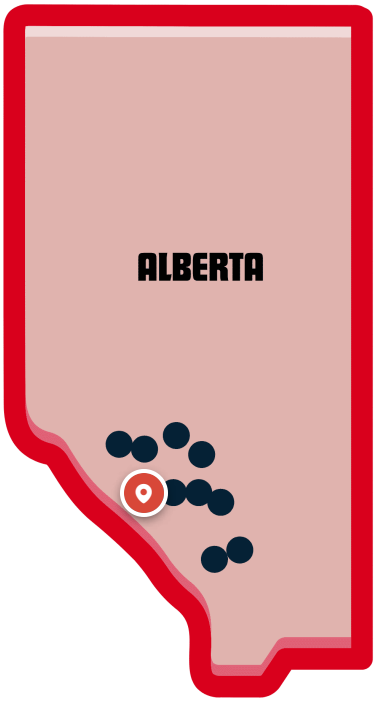
High River Climate Change Adaptation Action Plan

"Developed through in-depth collaboration with community members, staff, Council, and stakeholders, this 'made in High River, for High River' Climate Change Adaptation Action Plan will serve as a guide and equip the Town with measures to strengthen resilience in the face of a changing climate."

Check it out

Summer Village of Ghost Lake Climate Resilience & Adaptation Plan

"The Climate Resilience and Adaptation Plan was developed in line with SVGL's values of self-sufficiency and citizen action, and includes both governance and community level approaches. It aims to reduce climate uncertainty and build capacity among staff and residents around what works, what doesn't, and what actions need to be taken. It prioritizes co-benefits and multi-solving solutions, and pays particular attention to the challenges unique to a small, rural municipality."
Check it out



Diamond Valley Climate Resilience Action Plan

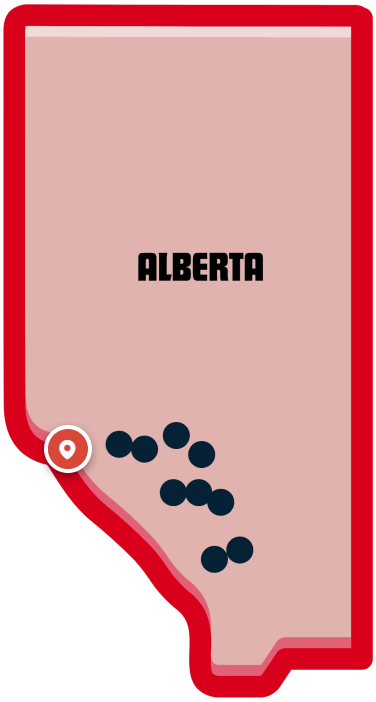
"The Towns of Black Diamond and Turner Valley (amalgamated as Diamond Valley), through the preparation of this Action Plan, are taking steps towards a safe, prosperous and resilient future. The Action Plan identifies a number of anticipatory measures to manage priority risks and opportunities anticipated to result from climate change in the area over the next several decades."

Check it out

Calgary Climate Strategy – Pathways to 2050

"The Climate Strategy is our roadmap on how we achieve net zero and climate-resilient Calgary. Approved by Council July 5, 2022, it builds on the previous strategy to align with the Council Climate Emergency declaration to achieve net zero emissions by 2050 and adapt to our changing climate at an accelerated pace and scale. "

Check it out



Canmore Climate Emergency Action Plan

"Our new Climate Emergency Action Plan outlines a comprehensive roadmap for a prosperous and climate-ready future for Canmore. This plan addresses the key hazards of a changing climate with strategic actions designed to enhance our community's safety, resilience, and well-being. "
Check it out

Want to see your town on the list? The Municipal Climate Change Action Centre can help provide funding and create a plan!

Recap

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

CONTINUE

Helpful Resources

Check out these resources from local organizations that support learning and action on climate change

CPAWS Climate Game Changers
Climate Game Changers is a “choose your own adventure”-interactive tool kit to help you better understand climate impacts, solutions and everyday actions.

VISIT WEBSITE

ACEE K-12 Resource Hub
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.

VISIT WEBSITE

Climate West ART Program
This program helps professionals working
in Alberta to develop a basic awareness of climate-change adaptation and build capacity to integrate adaptation into their professional practice.

VISIT WEBSITE

A Climate of Change Series

Recordings of a monthly web video series that take a deep dive into the latest issues and opportunities around taking climate action in Calgary.

VISIT WEBSITE

Find the full list of educational resources and programs to support learning for each of the topic areas at the end of this course.

CONTINUE

Overview

Diversifying Energy

Learning objective: Learners will gain an understanding of the current trends and energy solutions that are being implemented across southern Alberta to reach net-zero and reflect on how personal actions can contribute to these systemic changes.

Alberta's Energy Future: What Does it Look Like?

What's going on?

Alberta has plans in place to reduce fossil fuel pollution by 2050. The province's main focus is to reach net zero emissions, a balance where the amount of pollution we put into the air is matched by how much we remove. The province has commited to investing in carbon capture technology, cutting methane pollution, and eliminating coal-fired electricity (accomplished 30 years ahead of schedule in 2024). Alberta is also trying to make oil sands operations cleaner and has a plan for using hydrogen and other innovative technologies to reach these goals.

What are we doing right now?

Alberta is an energy leader and there are many projects and plans in place to diversify our energy and reach our climate targets. Some of these projects include:

- Carbon Capture for Nonprofits – Alberta Ecotrust – This project is deploying four micro-scale carbon capture and utilization units from technology provider CleanO2 in nonprofit buildings. Carbon is captured from each building's HVAC system, converted into potash, and then sold as soap.
- Pe-na-koyim on-Reserve Wind Project – Kainai/Blood Tribe and Indigena Capital – Alberta's first industrial-scale electricity-generating wind farm on Indigenous land, pioneering sustainable energy in the region.
- Bow Valley Energy Cooperative - Bow Valley Green Energy Coop (BVGEC) - A grassroots, volunteer-run organization that facilitates community-owned renewable energy generation projects in the Bow Valley and beyond.
- Lubicon Cree Nation - The Lubicon Cree Nation of northern Alberta is advancing the low-carbon energy transition with a 20KW solar energy system.

What can I do?

Your contribution to reducing energy consumption includes a lot of choices.

- You may choose to switch to a clean energy plan, or participate in a pilot program if your provider offers one;
- Be mindful of how much energy you use (e.g., switching off lights, unplugging electrical appliances, etc.);
- Choose energy-efficient appliances and technology for your home;
- Visit the Utilities Consumer Advocate for support navigating Alberta's utility market and understanding your rights and options regarding your utilities; and
- Talk to your friends and family about how to reduce your energy use and save money

CONTINUE

Powering Alberta

This is a net-zero home located in Edmonton, Alberta. You can participate in eco-solar home tours in Calgary and Edmonton to learn more about energy-efficient homes and experience the comfort they provide in person. Photo credit: David Dodge, Green Energy Futures.

Our homes, our communities and the way we move all rely on energy. Energy derived from burning fossil fuels either directly (e.g., gasoline) or indirectly (e.g., generating electricity), contributes to climate change by releasing large amounts of carbon pollution into the atmosphere. This means we must shift the way we design and interact with our communities, transportation systems, homes and how we feed ourselves as global energy demands change. In response to climate change, our energy systems must continue to diversify to achieve a net-zero future. Net-zero means finding a balance between the pollution we release into the atmosphere and the pollution we take out of it — if we reach "net-zero," the amount we remove is the same as the amount we put in. Reaching net-zero can mean using systems that do not produce any pollution, as well as those that remove an equal amount of pollution as they produce.

Renewable Energy

Solar and wind energy are the leading opportunities for renewable energy in Alberta. Our abundant solar energy means we have the optimal landscape for harvesting power from the sun. Consistent wind in southern Alberta makes it a reliable source of clean energy. Renewable energy can also be much more than just wind and solar. It can include other sources of energy like geothermal, hydro, biomass and others. Just like its name implies, renewable energy gets replenished after it is used, so there is no concern about it running out. Canada has committed to completely decarbonize by 2050 and to transition to a net-zero electricity grid by 2035.

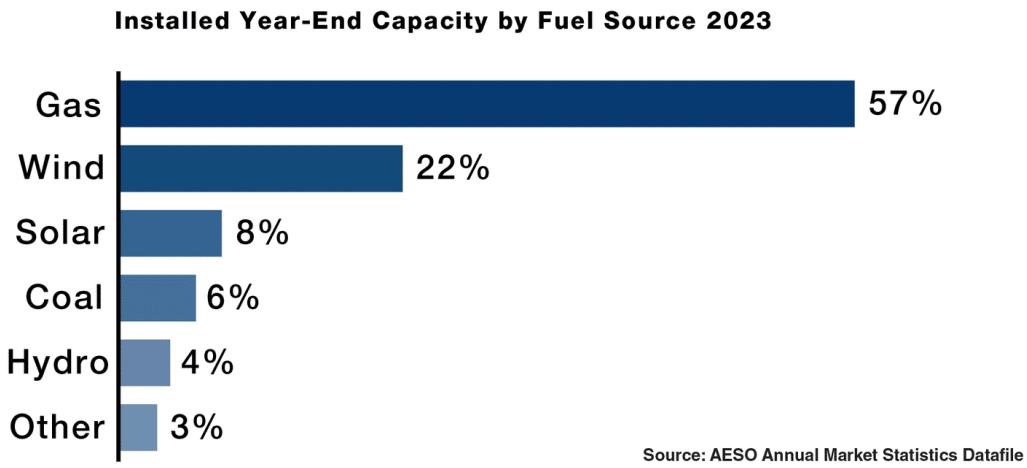
Alberta is well-positioned to make our energy system cleaner, safer, more secure and even more affordable. Harvesting our power from the wind and sun through wind turbines and solar panels has proven extremely successful and is becoming increasingly more common as Albertans learn the many benefits (including cost-savings) that come from renewables.

Alberta recently introduced new rules for renewable energy that have raised concerns in the industry. These rules impose several restrictions, including large exclusion zones where renewable energy projects cannot be built. While the government argues that these measures are necessary to protect agricultural land and pristine viewscapes, critics say the rules introduce unnecessary red tape and could significantly harm investment in the renewable energy sector.

CONTINUE

Alberta's Electricity Grid

The electricity we use is only as non-polluting as our power grid, and Alberta is working on some massive changes. Coal-fired electricity generation, a key source of power in the province for 150 years, was eliminated as a fuel source for electricity with the last coal plant shutting down in June 2024.



Where does Alberta's power come from? Note that coal-fired electricity generation was eliminated in 2024. The 2024 market statistics datafile showing this change will be available in 2025.

In early 2024, the Government of Alberta approved new electricity rules to modernize our energy system and make it more efficient and reliable. Key changes include:

1. **Boosting energy storage:** The new rules make it easier to build and expand energy storage facilities in Alberta. This is important because energy storage helps manage electricity supply and demand more effectively, especially as more renewable energy sources like wind and solar are added to the grid.

2. **Better planning for electricity:** Alberta's energy planners now have more flexibility to use different methods, like energy storage, to ensure the electricity system stays reliable without always needing to build more power lines. This could help keep costs down and make the grid more efficient.

3. **Self-supply and export clarity:** The rules also clear up how companies that generate their own electricity can use and sell any extra power. This has been a bit unclear in the past, but now companies have a better idea of what they can and can't do.

What Does This Mean for Albertans?

Modernizing our energy systems and electricity grids will not bring about major, negative changes to our daily lives. Our electric grid is constantly being upgraded and maintained to adapt to our energy needs and be more resilient to climate impacts. What we will see is an increased diversity in the energy sources that power our buildings, heat our homes and fuel our modes of transportation. Diversifying our energy sources is important, as it can help protect us against volatile markets and help us to save money in the long run.

Albertans have a choice when it comes to how we buy our energy. You may consider switching to a clean energy plan or participate in pilot programs if your

utility company offers them. Being mindful of our energy use is something some of us may be used to, and this will continue to be an important part in the way we use our electricity. Using more energy-efficient technologies and appliances will be a key way that we can cut back usage, reduce energy bills and increase the comfort of our homes. As these technologies continue to advance and become more common, they will become increasingly useful and more affordable.

“Some things won’t change … you’ll have electricity that will come out of the socket in your wall; you’ll plug whatever it is into that and you’ll get that electricity. That electricity may be generated in a different way, but, as a user and consumer of that electricity, there’s not gonna be any major changes there.”

Dr. Sara Hasting-Simons, Macro Energy Systems Expert

CONTINUE

Lesson 9 of 32

Jobs in Modern Energy

Opportunities For The Future

Randal Benson of Gridworks Energy Group has helped train more than 700 electricians to understand and install solar systems in Alberta. Photo credit: David Dodge, GreenEnergyFutures.ca

The job market in modern energy is growing as industries transition to cleaner energy sources. Jobs in clean energy are everywhere. Those new to the workforce can take many emerging training programs and courses that align with this transition.

Not only are new clean energy jobs becoming more common, but this changing market is full of opportunities for skilled workers with years of experience in other trades — their knowledge is transferable and valuable in clean energy industries.

Having both an abundance of skilled workers already in the energy sector and a growing number of skilled workers specialized in clean energy is one of the many reasons Alberta is leading the country in setting a standard for modern clean energy.

“Pursuing net-zero in Alberta could create nearly 170,000 new clean-technology jobs and contribute $61 billion in GDP to the province’s economy by 2050. For comparison, continuing on a business-as-usual path results in a materially lower 20,000 new jobs and contributes $4 billion in GDP by 2050.”

–CED Energy Transition Report

Recap

While our grid becomes cleaner, we can also find our own ways to reduce fossil fuel pollution and change the way we use electricity in our daily lives. While these changes have drastic impacts on mitigating climate change, they’ll also improve our health by reducing air and noise pollution, reduce the costs of energy, and make our environment cleaner.

CONTINUE

Helpful Resources

Check out these resources from local organizations that support learning and action on climate change

Energy Systems Map
Explore the energy system starting with energy sources all the way to the end uses of energy. The Energy Systems map includes an interactive map view, a searchable energy topics index view and accompanying videos.

VISIT WEBSITE

Renewable Energy Training Opportunities
The Canadian Renewable Energy Association (CanREA) has a free list of educational and training programs available at Canadian institutions to equip learners with the skills and expertise required to thrive in Canada's rapidly growing wind, solar, and energy storage sectors.

VISIT WEBSITE

Future Energy Systems
Educational content and opportunities to explore future energy systems in Alberta.

VISIT WEBSITE

Energy Champion

This program from Empower Me provides resources to help you learn more about your utility bills, apply for rebates, and save money by making energy efficient changes in your home.

VISIT WEBSITE

Find the full list of educational resources and programs to support learning for each of the topic areas at the end of this course.

CONTINUE

Overview

Resilient Communities

Learning objective: By the end of this module, learners will be able to describe at least one way communities can be more resilient in the face of climate change. This module explores how communities can become more resilient in the face of climate change by exploring the trends and actions underway in southern Alberta that will help communities reach net zero and adapt to a changing climate.

Preparing our Communities

What's going on?

Cities and towns in southern Alberta are taking climate change into account in their plans for the future, focusing on community design that balances the needs of people and the environment.

What are we doing right now?

Southern Alberta is home to many innovative projects and policies that are helping to create more resilient communities. These include:

- Kainai Iinnii Rematriation Project – Blood Tribe Land Management – A project aimed at reintroducing buffalo to southern Alberta.

● Miyawaki Forest Project – Calgary Climate Hub – Planting tiny forests with native species in Calgary to enhance community resilience.
● Putting Beavers Back to Work – Miistakis Institute/Cows & Fish – Collaborating with landowners to view beavers as a resource for flood mitigation and improving water quality and quantity.
● Citizen Science Projects - Nature Alberta - Research activities where everyday people help scientists by collecting data which strengthens communities by providing valuable information to tackle local environmental challenges.

What can I do?

There are simple actions that you can take to help make your community more resilient.

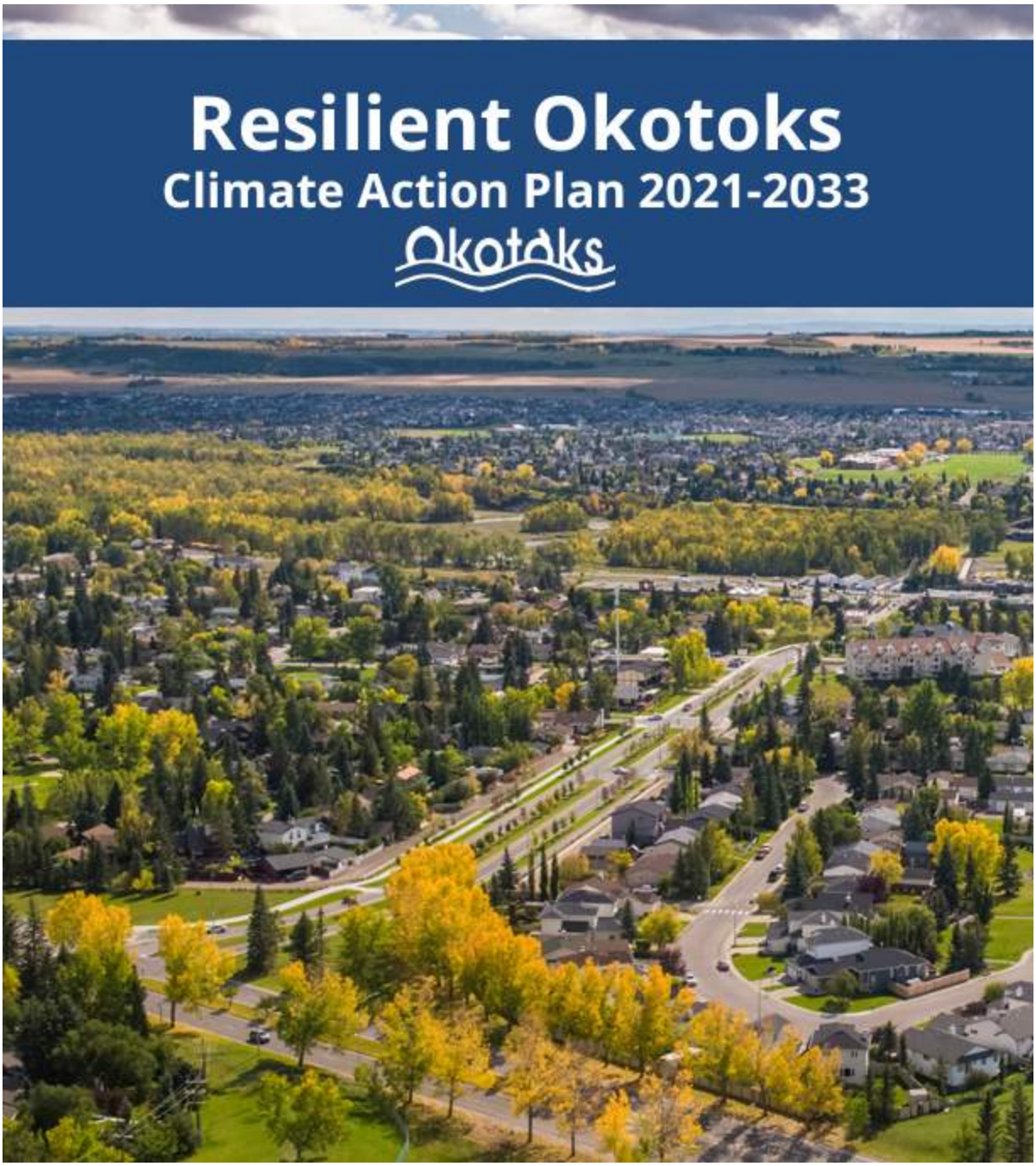
● Be an engaged citizen, vote and actively participate in the decision-making processes that shape our cities and communities. One way to get involved is to show your support by getting involved with campaigns that are looking to protect the people and places that are important to our communities, such as Alberta Talks;
● Participate in a citizen-science program and contribute to projects that can be used to inform local policies on energy and climate choices; and
● Host community conversations, like climate cafés, to talk about the issues you care about. Share your insights with your elected leaders to let them know what you support and how you would like to see change.

CONTINUE

Preparing Communities for a Changing Climate

There are nine municipalities across southern Alberta that are taking climate initiatives into their own hands. Building solutions at a local level allows community members to have more control over the safety and prosperity of their communities, while also having a direct impact on things they care about like improved air quality and conserving natural spaces.

When planning for our cities, towns and neighbourhoods, we have to think about a lot of different factors like how we get energy, how we move around and how we build our homes. Cities and towns are working on ways to make sure they are ready for changes in the climate, like improving their infrastructure and planning for extreme weather. They are also reducing the amount of pollution they release into the air. By designing communities where people can walk and be active, building homes and buildings that are more comfortable and use less energy, and working to keep our natural spaces healthy, communities can be safe from the impacts of climate change and also have a better quality of life.



The Town of Okotoks is one of nine municipalities in Southern Alberta with a Climate Action Plan in place.

“When you can go from a natural system to joining somebody on a patio, and when you know the people that run those small businesses in town, and when you can run into your council person or your mayor at the grocery store, that really fosters that sense of community and having power over your environment and being able to influence what’s happening there.”

Sheri Young, Former Climate Change and Energy Specialist in Okotoks

Climate Impacts on Rural Communities

Rural communities experience climate change disproportionately to urban areas because they are more reliant on the land, and their economies — commonly agriculture and resource sectors — can be sensitive to changes in climate. Not only are rural communities more susceptible to environmental changes like flooding and droughts, but citizens in rural and remote communities also are at a higher risk as they are typically further from emergency services when help is needed during unnatural disasters. In the case of extreme climate emergencies such as wildfires and floods, communities are often disconnected from necessary resources when infrastructure fails.

Connecting with your local government and sharing what’s important to you is one of the most important and impactful actions you can take. Being an engaged citizen

allows you to shape the policies that directly impact the people and places you care about. To start, you can find your elected official and write them a letter, send them an email, or give them a phone call.

In your interaction, share your story and voice your concerns by telling them about the changes you would like to see to create a more-resilient community. Share capacity-building programs with your elected officials to help them learn about the topics you care about and find tools, funding and resources to implement change.

CONTINUE

Fostering Community Resilience

Crews work to repair the Bearspaw South Feeder Main that ruptured in NW Calgary summer of 2024. Climate change is a contributing factor to the aging of our cities' infrastructure. The increased frequency and intensity of extreme weather events, such as floods, heatwaves, and storms, can strain infrastructure like roads, bridges, and water systems, accelerating their wear and tear. Photo credit: City of Calgary

Being aware of, and wanting to protect, our local environment also means being a leader in climate action. Community resilience is the responsibility of the municipality and the community members. There are numerous ways community members can help create that resilience, even if their municipality has yet to implement action. Voting and engaging with local government officials is yet

another way for community members to express their opinions and address their concerns about the effects of climate change in their community. True community resilience does not exist unless all members of a community are heard. Building a healthy, connected community means diversifying transportation modalities (public and active transportation) while also removing cars from the road, reducing emissions and congestion, enhancing access to emergency corridors and shelters, limiting heat effects, improving air quality, increasing equitable access to amenities, and contributing to improved green corridors and habitats that can also help reduce flooding.

A Municipality's Role

Climate plans and local carbon-reduction goals are set by municipalities — they're necessary to drive collective action that benefits the community as a whole. These larger-scale action plans can lead to improved infrastructure, climate emergency measures, incentives for water-conservation practices and rebates for upgrades that reduce energy consumption while also increasing the resilience of a building. While our environment is vulnerable to changes in climate, good planning and design can help provide protection from extreme climate events. A climate plan might require less residential paving, for example, to divert stormwater overflow and flooding — or might put into place an urban forest strategy so that more trees are planted to help absorb carbon from the atmosphere and reduce additional climate change.

Municipalities own over half of the aging public infrastructure in Canada and face some of the biggest challenges they've ever seen as a result of climate change. Creating plans to adapt to climate impacts is complex and uncharted territory for many municipal staff, councillors, residents and community leaders.

What does your resilient community look like?

In this video, urban, rural, and Indigenous communities in the prairies share their unique approaches, successes and lessons learned in prioritizing risks and preparing for the changes to come.

The Town of Raymond was Alberta's first electrically net-zero municipality — and one of the first in Canada. The Town installed solar panels on all of its municipal buildings to generate enough electricity to cover 100% of the Town's operational electricity use — from running buildings to lighting streets. Check out their video to hear their story.

CONTINUE

Land Use and Management

Using active transportation is beneficial for many reasons. Not only does it improve your physical and mental health, but it is also good for the health of our air as a non-polluting climate solution. Photo credit: iStock.

In urban communities, pathways and greenspaces provide citizens with ways to navigate besides traditional road networks. These spaces increase the use of active transportation by allowing other modes of transportation, such as biking and walking, to become more viable. Reducing vehicle traffic also creates safer

roads and reduces pollution. There are many economic benefits for communities with robust trail networks and greenspaces. For starters, building and maintaining these spaces requires labour, which increases local income and employment. Tourism has been proven to increase in these areas as local attractions bring visitors to the community — and the local economy benefits from visitor spending. While these spaces support local businesses, they have also been shown to increase property values for nearby homes. Trails and greenspaces improve health and well-being. Active modes of transportation increase physical activity and immersion in nature, which improves physical and mental health. Reducing the number of fossil fuel-burning vehicles by implementing cleaner ways to commute also improves the overall quality of the air we breathe.

More than 80% of Albertans live in urban areas. Municipal governments such as those in Lethbridge and Calgary have recognized the importance of building climate resiliency into their city planning, while others are still incorporating it into their vision for the future.

Recap

Alberta's communities, while vulnerable to the effects of climate change, have the power to address their own concerns by implementing changes within their environments. Residents have a strong sense of community and a strong connection to the landscapes around them, making actions tangible and immediately beneficial. Climate action across communities in southern Alberta are on the rise as renewable energies and environmental conservation gain traction around the world. Through these opportunities, Albertans will benefit from a better quality of life, cost savings and improved public spaces.

CONTINUE

Helpful Resources

Checkout these resources from local organizations that support learning and action for communities

Calgary Climate Hub
The Calgary Climate Hub is a volunteer-led, non-profit organization that unites a diverse group of Calgarians committed to working together to support meaningful local action on climate change.

VISIT WEBSITE

Green Communities Guide
An essential tool to help communities plan and implement nature-based solutions and strategies to conserve water, protect water quality, preserve agricultural land, and protect critical open spaces and wildlife habitat.

VISIT WEBSITE

Climate Resilience Express
A workshop-based process for municipalities to quickly build community support for climate-adaptation plans.

VISIT WEBSITE

Advancing Citizen Science In Alberta

From reporting grizzly bear sightings to listening to amphibian calls and assessing water quality, many Albertans are engaged in scientific research and monitoring across the province. Through citizen-science, Albertans have the opportunity to help answer questions on Alberta's environment, contribute to data and information gaps, and inform decision-making.

VISIT WEBSITE

Find the full list of educational resources and programs to support learning for each of the topic areas at the end of this course.

CONTINUE

Overview

Learning objective: By the end of this module, learners will be able to list examples of transportation solutions that are available to them in their daily lives and describe how personal actions contribute to systemic changes. This module explores changes that are being made to the transportation system and trends as they relate to climate mitigation and adaptation frameworks.

How We Move Around Matters

What's going on?

The government of Canada has introduced regulations to increase the supply of zero emission vehicles in an effort to reduce transportation-related pollution and make electric vehicles more accessible to consumers in Canada. We can expect to see changes in Alberta's transportation systems in the next few years, including an increase in personal and public electric vehicles and the charging stations to support them, increased access to micro mobility programs (like e-bikes and e-scooters) and initiatives that facilitate active transportation.

What are we doing right now?

Alberta is home to many innovative low-emissions transportation projects, including:

- Alberta Electric School Bus Deployment Project – Pollution Probe/Southland Transportation – Pilot project to analyze deployment of an electric school bus in Calgary.
- Peaks to Prairies EV Charging Network – Community Energy Association – A network of fast-charging stations to support EV travel to and within southern Alberta, connecting urban and rural communities.
- Calgary High School Active Transportation Project – Youth En Route – Removing barriers for youth to bike to school (bike fleets, secure storage, maintenance/repair classes, fostering student leadership).

What can I do?

- Support policies that promote alternative modes of transportation (EVs, transit, walking, rolling and cycling). Consider contacting your elected officials to request more options for safe, affordable and efficient public and shared transportation.
- Incorporate alternative transportation into your life whenever possible.

- If you must purchase a car, consider an EV and take advantage of government incentives and rebate programs that can help lower costs.

CONTINUE

Transportation Trends and Benefits

The City of Calgary is testing e-scooter and e-bike parking "corrals" to help make sidewalks more accessible in Calgary. Photo credit: City of Calgary

As electric transportation becomes more desirable for a growing number of Albertans, we also see it becoming more accessible and affordable — in all its forms. Active transportation is also trending as people look for convenience and diversification in the way they get around their communities while also benefiting their physical and mental well-being. Changing the way we move will have tremendous positive effects on both the economy and health of our communities.

Transportation Impacts on Climate

Transportation accounts for 15% of Alberta's carbon pollution. By electrifying our modes of transportation, using emission-free forms of transportation (bikes, walking, etc.) and by increasing the use of shared transportation (buses, trains, carpooling, etc.), we could eliminate these emissions entirely. Rural communities have some limitations in implementing long-distance non-polluting transportation solutions as they face the challenge of accessibility. Carpooling is the best option for reducing emissions during long commutes. Within communities, walking and biking can be a convenient way to get to and from local destinations. For both rural and urban environments, it is important for governments to meet the transportation infrastructure needs of citizens that can provide net-zero opportunities. By cleaning our energy grid and modernizing our transportation system, we can combat these sources of greenhouse gases and collectively mitigate climate change, which is already affecting our transportation systems and our health.

CONTINUE

Climate Impacts on Transportation

The transportation infrastructure in Alberta communities is created to cater to our specific climate. As climate changes, the stress from extreme climate events degrades our infrastructure and has costly economic consequences. Permanent infrastructure such as railways and roads are especially vulnerable, as they aren't built to withstand significant changes in temperature and can suffer early degradation and potential failure. Changing temperatures and precipitation patterns lead to increased road weathering, forcing Albertans to deal with more springtime potholes and construction repairs. Road disruptions and more accidents due to winter rains, freezing rains and wet snow are also of high risk in addition to moderate risks of road washouts/blockages from high-intensity/low-duration rain events, which can lead to landslides and stormwater overflow. These

impacts underscore the need to implement solutions such as diversifying transportation and supporting infrastructure to create resilience within our transportation networks, such as reducing pavement to divert stormwater flow, increasing bike trails that can reduce traffic on degrading roads, using permeable pavement, and other infrastructure-based solutions.

CONTINUE

Active Transportation

Calgary enjoys an extensive network of multi-use pathways available for walking, running, in-line skating or cycling. Notably, Calgary has the largest urban pathway and bikeway system in North America, with the City managing around 1,000 km of regional pathways and an additional 96 km of trails. Photo credit: Michael Job Loquellano, Pexels

Active transportation includes non-motorized, human-powered forms of transportation such as walking and biking. Communities within cities, downtown

areas and rural towns have an opportunity to create and support active transportation infrastructure.

“Built environment improvements that support active transportation — e.g., traffic calming, streetscape improvements, traffic speed reductions and road space reallocation, etc. — can also generate safety advantages and reduce injury risks, which is a benefit not only for pedestrians and cyclists, but also transit riders and other road users.”

Canadian Institute of Planners

One way to create active transportation within a community is to re-purpose abandoned spaces such as lots with old and unused buildings or inactive railway tracks into walking/biking trails or parks and green spaces. Active transportation not only takes more vehicles off the road, making them safer, but it has economic and health co-benefits to people who use such mode of transportation — they save on fuel costs and boost their own cardiovascular health.

CONTINUE

Electrified Transportation

In Canada, roughly **one in five** new vehicle registrations in 2024 was for a battery-electric, hybrid or plug-in hybrid vehicle.

Try me! This interactive dashboard provides access to current and historical data on new motor vehicle registrations. Data for Alberta is currently not available due to contractual limitations of the existing data-sharing agreement, however, it is included in the Canada total.

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Though electric cars make up a small portion of vehicles in Alberta, they are increasingly becoming more common as technology advances. Between 2020 and 2024, the number of registered electric vehicles in Alberta alone increased by **1,396%**. Electric transportation can come in many forms other than just electric cars. Increasingly, we are seeing the uptake of micro-mobility which includes the use of e-bikes, electric scooters or smaller forms of transportation that use no fossil fuels, take a fraction of the time to charge, and reduce traffic by allowing for passengers to take designated trails and paths (that may also reduce commuting times).

Electric vehicles (EVs) include more than personal modes of transportation. Electrification on a community public transportation level can mean fully functional, fully electrified bus transit and railway train systems that allow commuters to make low-emission ride choices. Community-level change requires community-level engagement. To be able to benefit from these changes, Albertans need to let their local elected officials know that they want to have these choices made available to them.

Albertans can also consider greener options when using ride-sharing companies by setting their preferences to “hybrid” or “electric” on ride-request apps. The use of electrified and shared-ride systems are the most efficient way to combat transportation emission. Using electrified shared-ride systems (Uber, Communauto, taxis) reduces energy use, which, with our current predominantly fossil fuel-based energy grid, reduces even more emissions. When possible, some ways to participate can include riding electric buses and trains and carpooling.

"Despite having a fossil fuel-dominant electricity grid, Alberta’s electricity comes from a variety of sources including natural gas, solar, wind and hydroelectric. Even with a grid powered largely by fossil fuels, electric vehicles produce less greenhouse gas (GHG) emissions than gas-powered cars overall.”

Municipal Climate Change Action Centre, Mythbusting Electric Vehicles in Alberta

CONTINUE

The diversity in transportation and the movement away from fossil fuel-powered transportation not only reduces pollutants in the air that affect our personal health and contribute to the effects of climate change, but it also makes us more resilient against rising fuel costs. As more electrified forms of transportation

become available, the technology will continue to advance and better serve our needs while also becoming more affordable.

The technology for electrified transportation is growing rapidly as engineers unlock the potential for individual EVs to integrate into the overall power grid. Implementing smart technology provides an opportunity to create a balance between drawing energy and providing energy, known as bidirectional charging. This technology allows batteries that are initially pulling from the grid to also serve as a backup source of energy when the grid fails. In cases of extreme climate events causing power outages, those with access to these charged batteries can use it to power homes or community buildings for days.

“Pretty much all electric vehicles out there, whether those would be cars, buses, trains, even ferries that are being switched to electric, can both store enormous amounts of electricity, as well as push that electricity back to the grid when needed"

Rajko Pavic, Electric Vehicle Expert in Calgary

CONTINUE

Jobs in Transformed Transportation

A car mechanic maintains an electrically powered Jaguar I-Pace demonstration car in a car workshop. In southern Alberta, SAIT offers an Electric Motor Systems Technician program for learners interested in pursuing this career. Photo credit: Marijan Mura, picture-alliance/dpa/AP Images

As the percentage of electric vehicles grows in Alberta, so does the need for experts in this field. The used electric car market is growing, and the number of repair shops specializing in electric car maintenance will grow as warranties run out

and people seek out third-party shops for resale and maintenance. While electric vehicles are different from gas-powered vehicles, many of the skills needed to perform maintenance on these vehicles remain the same and supplementary courses offer specific EV training. Cities will need engineers to put more EV public transportation on the roads and to maintain and keep it in top condition. The infrastructure needs associated with a growing use of charging stations for both municipal electric transportation and personal electric vehicles will increase the need for personnel to both build and maintain them across the province.

Recap

Electrification of transportation is soon to be the new normal globally, nationally and in Alberta. The different ways we get around in our lives fall along a long spectrum of transportation methods, all of which will be improved as transportation technology grows. Active transportation will benefit us in navigating within our communities, as well as improving our health and local economies. Increased electric and shared transportation will drastically reduce our greenhouse gas emissions, reduce the amount of pollution in the air and save us money. Citizens and decision-makers (e.g., elected officials and government staff) collectively need to make changes to contribute to the modernization of our transportation systems.

CONTINUE

Helpful Resources

Check out these resources from local organizations that support continued learning about electric and active transportation.

Electric Vehicles For Municipalities Program
The Electric Vehicles for Municipalities (“EVM”) program provides funding to municipalities to assist their transition to an electrically fuelled vehicle fleet.

VISIT WEBSITE

Zero-Emissions Vehicles Program
Learn about zero-emission vehicles, programs, funding and research.

VISIT WEBSITE

Healthy Living Lab
Research and initiatives that explore the link between the built environment and population health

VISIT WEBSITE

Meet Southern Alberta EV Drivers

This network of electric vehicle charging stations was established in 2016, spanning from Canmore to Waterton out to Medicine Hat. There are more than 20 charging stations in urban and rural centres, making it easy to explore southern Alberta by electric vehicle.

VISIT WEBSITE

Find the full list of educational resources and programs to support learning for each of the topic areas at the end of this course.

CONTINUE

Overview

Learning objective: By the end of this module, learners will be able to describe at least one climate change impact and solution for their home. This module provides an overview of the trends and solutions that are being implemented to help homes reach net-zero.

Preparing Our 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:

- Home Upgrades Program – Kambo Energy Group –The Home Upgrades Program offers free energy efficiency education and home upgrades to qualified families living in Calgary, Canmore, and Edmonton. They identify and install upgrades based on each household's unique needs, such as new furnaces and insulation, and utilize air-sealing to improve efficiency.

● 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.

CONTINUE

Creating Resilient Homes

This Calgary home, located in Symons Valley is an example of what is possible when it comes to extremely energy efficient homes. This 2400 square foot passive house is is heated by the sun, powered by the sun and has no furnace. Photo credit: Brookfield Residential via Green Energy Futures.

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. 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

CONTINUE

Climate Impacts on Homes

Flooding in the community of Livingston in Calgary after severe rainfall and hail caused flooding and damage to several properties. Photo credit: Maria Granados

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

CONTINUE

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 talking about his net-zero home

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.

CONTINUE

What Can You Do as a Renter?

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.

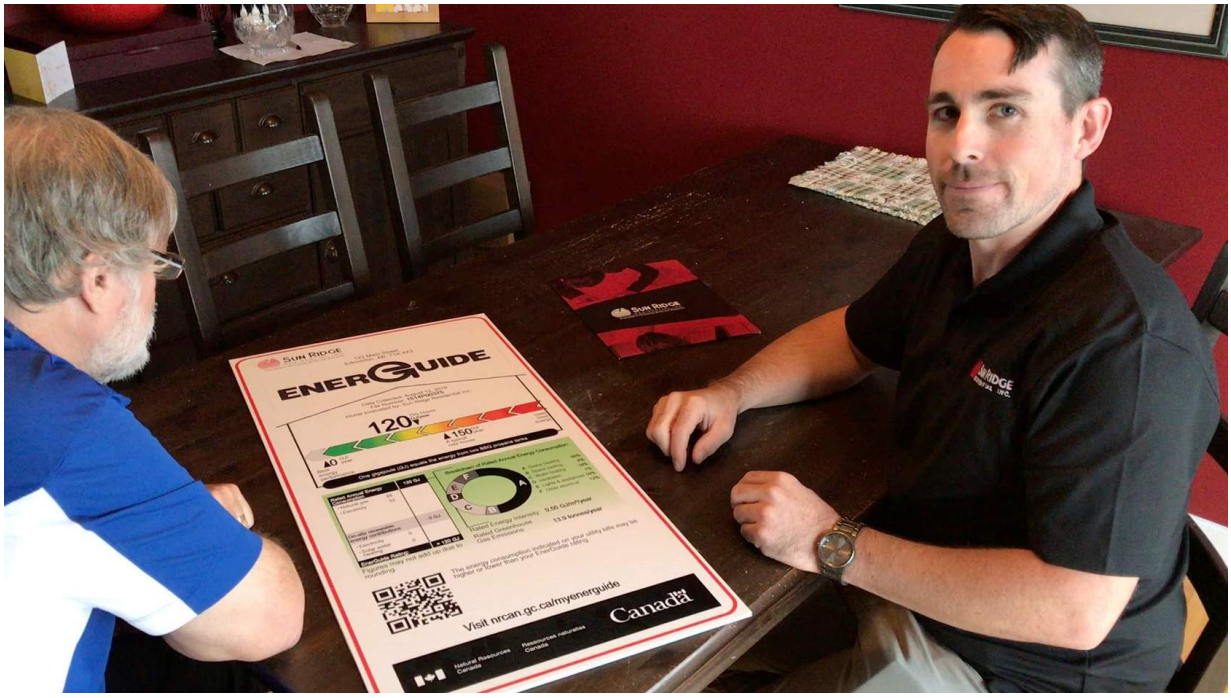
Making changes to your home that increase its efficiency also increases its value, decreases energy costs and makes your home more comfortable. Click the links to see how homeowners can take action for change to prove that any home can be more efficient and other simple switches that can save you money 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. Across Canada, there are higher rates of Indigenous populations living in inadequate housing, making them more vulnerable to the effects of climate change. 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.

CONTINUE

Jobs in Net-Zero Homes



Energy auditors help homeowners and business owners understand how to make buildings more energy efficient, increasing the comfort of the building and saving you money on your energy bill. Photo credit: David Dodge, Green Energy Futures

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.

CONTINUE

Decarbonizing our homes and buildings will need a skilled workforce. Check out this case study from the Montana First Nation and learn about how community members gained more than just solar panels with their solar project.

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.

CONTINUE

Helpful Resources

Check out these resources from local organizations that support learning and action on climate-ready homes.

Climate-Ready Home Guide
This guide covers choices you can make during a renovation or construction project, or during home maintenance, to make your home more resilient to climate change.

VISIT WEBSITE

Change Homes For Climate Guide
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.

VISIT WEBSITE

Net-Zero Homes
This guide includes information on net-zero homes and a directory of qualified net-zero builders and renovators.

VISIT WEBSITE

Green Calgary Tip Sheets
Guides, tip sheets and resources for a greener home.

VISIT WEBSITE

Find the full list of educational resources and programs to support learning for each of the topic areas at the end of this course.

CONTINUE

Overview

Learning objective: By the end of this module, learners will be able to describe at least one connection between our food system and climate change; and at least one solution to create more sustainable food systems. This module provides an overview of the relationship between our food systems and climate change and shares insights on the trends and solutions being implemented at different scales that create sustainable food systems.

From Farm to Plate

What's going on?

Climate change is having a big effect on Alberta's food systems, from farm to plate. The weather is changing, causing problems for farmers like droughts, heavy rain and unusual frosts. This can mean crops don't grow well or at the right times, or ranchers don't have sufficient forage for their herds. Additionally, melting glaciers and shifting precipitation patterns can result in changes to water availability, impacting irrigation and water-management practices in agriculture. These changes are making it harder for farmers and ranchers to have viable businesses and for people to have access to fresh, local food. To address these problems, we need to make sure our food systems can handle the changes brought on by climate change and support the agriculture industry through policy and consumer choices to build a sustainable future for our food.

What are we doing right now?

From regenerative farming practices to reducing food waste, Alberta has many innovative projects that support sustainable food systems:

- Regenerative Agriculture Lab – Rural Routes to Climate Solutions – A collaborative platform for those along the agri-food value chain (e.g. farmers, researchers, food retailers) to incubate, test and explore ideas, initiatives, policies and programs that can accelerate the adoption of regenerative agriculture in Alberta.
- Highfield Farm– Compost Council of Canada and City of Calgary – A Regenerative farm located on a 15-acre piece of underutilized space in the industrial area of the City of Calgary.
- Circular IC&I Project: Circular Innovation Council, Leftovers Foundation – Bluplanet Recycling – An initiative aimed at diverting food waste from small and medium enterprises and rerouting it to charities in Calgary.

What can I do?

There are several actions you can take to support sustainable food systems, from reducing food waste to shopping locally to increasing the number of vegetables you eat with every meal. With the rising cost of food and inflation in Alberta, some actions may be more accessible than others. Supporting a sustainable food system might look like:

- Trying to incorporate more legumes, fruits and vegetables into your diet.
- Participating in programs that help reduce food waste. Services like Too Good To Go let you purchase food directly from local bakeries, restaurants and stores at a fraction of the cost, diverting good food from the landfill.
- Connecting with local farmers to learn about where your food comes from.
- Planning meals and bulk cooking can help you save time and reduce food waste.
- When possible, purchase seasonal, local produce. Farmers markets or local food subscription services are great places to start, and this can be less expensive than buying out-of-season produce.
- Join a community group or sign petitions that advocate for policies that promote sustainable and equitable food systems.

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Climate and Agriculture

The Climate-Conscious Food Systems Project funded by Mobilizing Alberta's Climate Action Grant Program aims to provide a platform to highlight the sustainability practices of the Southern Alberta agriculture industry. Photo by Calgary Stampede via Mobilizing Alberta.

In Alberta, a changing climate will mean we'll have to adapt farming methods and where we get our food. Locally, farming has the potential to reduce emissions, be resilient and be a part of the climate solution. Farmers and ranchers have long

been stewards of the land and are key in helping solve the challenges global food suppliers face as a result of climate change. Implementing new and adapted agricultural practices that allow us to grow and provide a variety of foods locally would make global food shortages a small concern for Alberta's food supply.

Alberta farmers will need several kinds of support to be able to expand and continue to implement sustainable growing practices. Sourcing foods locally not only benefits the resiliency of our food supply, but it benefits the local economy, reduces emissions and strengthens our relationship with our food and the farmers who grow it.

Climate change is already having drastic impacts on our global and local food systems. Farmers worldwide experience the challenges of growing crops in a changing climate with warmer temperatures and changes in precipitation.

Here in Alberta, our farmers face these challenges, too. As consumers, we will also see evidence of this in our daily lives as food prices increase and the food supply chain changes — foods we regularly eat may become less accessible due to climate challenges. This will mean drastic impacts on the choices we have to make about the food we eat, and what we will see available at our local grocery centers.

Impacts on Agriculture in Alberta

While certain aspects of climate change, such as a longer growing season, could benefit farmers in Alberta, it is more likely the net outcome will be negative because of the costly nature of the agricultural disasters caused by climate change. Alberta can expect increases in weather extremes such as forest fires, droughts and intense rainfall events.

Weather becoming more unpredictable means that traditional ways of agriculture will be challenged. For instance, in 2021 Alberta crop yields dropped by 37% due to a severe heat wave and devastating drought, forcing the Government of Alberta to provide $340 million in aid to help producers overcome the financial challenge.

Climate challenges that can result in devastating impacts on crop yields, and that we are likely to see in Alberta, include:

- **Delayed seeding from spring flooding on fields**
- **Wilted crops from long droughts**
- **Delayed harvesting due to extreme weather**
- **Abandoned crops due to unexpected snow**
- **Restricted feed availability for cattle and livestock**

The challenges aren't expected to disappear, but rather continue to get worse for farmers and ranchers in Alberta and across Canada. The future of agriculture means developing resilience-focused and sustainable practices in the face of climate change. The Government of Canada is investing more than half a billion dollars into federal programs to support farmers adopting sustainable practices and clean technologies. These new programs include the AgriInnovate Program and the Agriculture Climate Solutions Program.

See it in the News

This video features Dr. Stan Blade, dean of agricultural, life and environmental sciences at the University of Alberta talking about climate-related challenges Alberta's agriculture is facing.

CONTINUE

Food System Challenges

Agriculture practices depend on climate stability. The changes farmers see now — and will continue to see in the future — not only increase risk to the economic health of farming families and local communities, but will likely create food supply-chain issues on a global scale, affecting the availability and costs of food we have become used to eating regularly.

The consumer relying on a particular diet throughout the year, regardless of the season, is something that might have to change, as the places we rely on for that food to come to us from California or from Mexico as they face their own climate problems, we may not be able to rely on that supply.

Dr. Tatenda Mambo, Food Systems Specialist and Simon Farms Project Manager

What do you do when grocery stores are not available? Check out this case study from the Garden Hill First Nation, a rural community facing food system challenges due to their remote location.

The Meechim Project follows the story of Garden Hill First Nation — a northern Manitoba community that is only accessible via air and ice roads — and its journey to build a self-sustaining farm. Through a combination of both Indigenous and farm knowledge, the community's efforts to attain food sovereignty show that climate resilience can lead to better social, economic, health and environmental outcomes for all.

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Solutions in Agriculture

Dr. Tatenda Mambo manages the Simon Farm project. The 21-acre plot of land is located south of Calgary near High River, and is on a five-year loan to the university by John Simon. Photo credit: Riley Brandt, University of Calgary

There is a need for both climate change-adaptation and mitigation measures in the agriculture industry. Adaptation will help minimize losses that will be inevitable with the trends in climate change we see now. Examples of adaptation include

changes to resilient seeds, adapted machinery to work in various conditions, improved water-management systems and practices to reduce soil erosion. Mitigation in the agriculture sector will primarily focus on reducing emissions within the industry.

Farmers for Climate Solutions states that the climate crisis and farmers' debt crisis share many of the same causes and many of the same solutions. Read more about the connection here.

Consumer Impacts

As producers struggle to overcome climate-change challenges that reduce crop yields, the cost of food will continue to rise. As consumers, we can be mindful about where our food comes from and support sustainable solutions. Supporting local innovative agriculture (such as indoor farming) that leads to year-round food production will increase investment in solutions that reduce our reliance on imported food. These solutions reduce transportation costs and emissions and provide us with a stronger connection to our food source.

Livestock can also be part of the solution. Choosing to buy sustainable beef when possible helps maintain healthy grasslands. Sustainable ranching provides extremely valuable carbon sinks that pull carbon from the atmosphere and cycle to reintroduce it to our soils, making landscapes more resilient. Reducing emissions through our diets is not solely about where it comes from, but also what it is. There are a variety of foods that are significantly less emissions-intensive that we should consider at the top of our grocery lists.

What foods are you eating that are associated with high emissions? Go here to see how your food diet compares and see if there are ways to reduce your emissions by swapping for lower-emission foods next time you visit the grocery store.

For people in southern Alberta ... we do have a choice. We eat three times a day and every time you put something in your mouth, you are making a choice. You're sending a signal to the market as to what it is you want.

Dr. Tatenda Mambo, Food Systems Specialist and Simon Farms Project Manager

Recap

Climate change will affect agriculture and our food systems in truly significant ways. In the coming years, we will see a shift in the way agricultural systems operate as farmers in Alberta and around the world adapt to changing climates and overcome challenges such as water-supply shortages and heat damage to crops. Producers who adopt farming innovations that both increase farm resilience and serve as a climate solution are leaders in the future of agriculture in Alberta and across the globe. Consumers will have to be more mindful about food habits and willing to adjust in order to support a resilient, local and abundant local food system.

CONTINUE

Helpful Resources

Check out these resources from local organizations that support learning and action for sustainable food systems.

Alberta Environmental Farm Plan
A voluntary, whole-farm self-assessment tool that helps producers identify their environmental risks and develop plans to mitigate identified risks.

VISIT WEBSITE

Nature-Based Solutions For Farms
ALUS (Alternative Land Use Services) helps farmers and ranchers build nature-based solutions on their land.

VISIT WEBSITE

Regenerative Agriculture Lab
A series of workshops, interactive tools and peer-topeer learning moments on regenerative agriculture practices.

VISIT WEBSITE

Alberta Food Directories

Connecting Alberta-based food processors and producers with buyers to promote locally-produced food.

VISIT WEBSITE

How To Start Farming In Alberta (Guide)

A starter kit for those wondering how to start farming in Alberta.

VISIT WEBSITE

Find the full list of educational resources and programs to support learning for each of the topic areas at the end of this course.

CONTINUE

Talking Climate Toolkit for Community Leaders

Curious about how to engage in conversations about climate change? Check out this resource by Re.Climate for climate communications best practice and learn how to host climate dialogues as a form of climate action.

Mobilizing Alberta Toolkit.pdf

2.7 MB

CONTINUE

Full List of Resources to Support Continued Learning and Action

Empower Me offers multilingual coaching and workshops on home and energy education workshops to underserved communities across Alberta, British Columbia, and Washington state.

In this final section, you'll find a comprehensive list of resources, programs, and grants designed to complement everything you've learned about. This curated collection aims to support you in your learning journey, connecting you with practical tools and local opportunities that can help you turn knowledge into impactful action.

If you'd like to recommend a resource to add to this list, please send us a message at mobilizing@ucalgary.ca