



Our Clean Future

A Yukon strategy for climate change, energy and a green economy





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On the cover: Old Crow solar project. Photo: Government of Yukon/Bree Josie

Caribou near Dempster Highway. Photo: Robert Postma.

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Climate change represents the biggest challenge of our generation.

Yukoners have told us loud and clear that they care passionately about climate change and want to see Yukon doing our part. Our government listened.

We have established an ambitious and achievable greenhouse gas reduction target for Yukon and laid out concrete steps we will take to mitigate and adapt to the impacts of climate change. We will integrate these efforts with building a green economy and an energy sector increasingly focussed on renewable sources.

Our Clean Future is the tangible result. We developed shared priorities for climate action in partnership with Yukon First Nations, transboundary Indigenous groups and Yukon municipalities. We heard from the public and members of stakeholder and industry groups. Thank you to all who provided valuable ideas and feedback. This Yukon-made strategy sets clear direction for a strong and resilient future.

Rising to the challenge of climate change requires participation from all Yukoners. Over the past few months, Yukoners have demonstrated what we are willing to do to keep our families, friends and communities safe. In the face of the COVID-19 pandemic, we have had to innovate and adapt in terms of how we connect with loved ones, the ways in which we work and operate businesses, and how we continue to look after one another as a small, closely connected territory.

We are proud of the strength and resiliency demonstrated by Yukoners as we have all adapted to the demands of COVID-19. We call on Yukoners to continue to be leaders as we make further changes to address climate change. As your government, we will be with you every step of the way, from rebates and financial support to help you buy low-carbon technologies to leading by example through improvements to our own buildings and vehicle fleet.

We also look forward to continued collaboration with Yukon First Nations and transboundary Indigenous groups on climate action, as the Council of Yukon First Nations and the Assembly of First Nations-Yukon Region spearhead the development of a Yukon First Nations climate change action plan. We recognize the threat that climate change poses to Indigenous cultures, ways of life and wellbeing and will continue to support Indigenous-led climate action.

As governments around the world tackle the economic impacts of the COVID-19 pandemic, it is critical that economic stimulus efforts align with our climate change commitments. Otherwise, we risk making one challenge worse through our response to another. In partnership with the Government of Canada, we will invest over \$200 million over the next four years in renewable energy generation, energy efficiency, clean transportation and adaptation to the impacts of climate change. These actions will position us for long-term sustainability and self-sufficiency while helping Yukoners recover from the financial impacts of the COVID-19 pandemic. Rather than returning to normal, we will take this opportunity to rebuild and refocus for a clean future.

A handwritten signature in blue ink, appearing to read 'S.S.', located below the main text.

The Honourable Sandy Silver
Premier of Yukon

MESSAGES FROM PARTNERS

Climate change is a threat to the Vuntut Gwitchin, to the lands, water and animals we rely on for sustenance and to practice our culture. Reducing our dependency on fossil fuels through innovative clean energy projects and a green economy that provides sustainable jobs for our youth are opportunities that build community resiliency, energy security and a better future for our children.

Vuntut Gwitchin Government Chief
Dana Tizya-Tramm

White River First Nation is pleased to be a part of this initiative to address climate change in the Yukon. Our members are observing changes out on the land and they are happening much quicker than expected. Our community is thrilled to see our 1.5MW solar field constructed in Beaver Creek this summer to offset our use of diesel in the community. By taking action on climate change now, we are lessening the impacts to the land and water that future generations will have to adapt to.

White River First Nation Chief
Angela Demit

Municipal governments have the flexibility not available to larger governments to quickly make changes and find opportunities for climate-change adaptation and mitigation. The City of Dawson is excited to be part of this work and making climate-friendly changes to our own operations.

City of Dawson Mayor
Wayne Potoroka

The City of Whitehorse is aware of the consequences of climate change and the strong political will required to deal with this global challenge. As a result, we declared a climate change emergency on Sept. 23rd, and we continue to closely monitor the risks to our City's residents and businesses. The City is committed to taking action on climate change by working to reduce corporate and community emissions, as well as adopting climate change adaptation initiatives.

City of Whitehorse
Mayor Dan Curtis

As long standing stewards of our traditional territory that spans Yukon, Northwest Territories and British Columbia, Acho Dene Koe First Nation (ADKFN) will continue to support actions and strategies that balance economic opportunity with the preservation of our lands and waters. Through implementation of the strategy, we look forward to working with the Yukon Government and our First Nation partners to maintain our ability to engage in traditional activities and supply more of what we eat through local harvesting and food production.

Acho Dene Koe First Nation Chief
Gene Hope

The Inuvialuit have an interconnected and enduring relationship to the Yukon North Slope. This area and its adjacent seas have supported our culture and sense of identity for a very long time. As such, the preservation of this land and the rest of the Inuvialuit Settlement Region (ISR) is keenly important. We welcome effective partnerships across northern Canada to advance collaborative climate action and sustained traditional livelihoods.

Inuvialuit Regional Corporation Chair and
Chief Executive Officer
Duane Smith

We live in a world that is rapidly changing. Climate change is threatening ecosystems, subsistence harvesting, infrastructure, leisure activities and many other aspects of our lives.

Yukon's population is growing, along with our need for reliable, affordable and renewable energy to continue to power our lives, our work and our economy. New economic opportunities are emerging in the sustainable, green economy.

Across the North, we have a long history of coping with and adapting to changing, and sometimes harsh, conditions. First Nations and Indigenous identities and ways of life are intimately connected with the land, rivers and mountains that are home. Generation after generation, Indigenous people have built and passed along knowledge, skills and values shaped in part by the changing patterns of the landscape.

Our history of adaptation and resilience provides a strong foundation as we work together to address climate change. However, many of the changes we are experiencing now are unprecedented in terms of scope and speed, making it more important than ever to come together to share our collective knowledge and experiences to take action for a healthy future for our children and grandchildren.

In fall 2019, the Government of Yukon declared a climate change emergency, following in the footsteps of the City of Whitehorse and the Vuntut Gwitchin First Nation. In February 2020, Yukon First Nations declared a climate emergency due to the threat that climate change poses to the culture and way of life of First Nations people. In the declaration, Yukon First Nations call on all governments, corporations and individuals to act in the best interests of the planet and future generations as they come together to address climate change.

Outside Yukon, countries around the world have committed through the Paris Agreement to keep global temperature rise below two degrees Celsius and respond to the impacts of climate change. In Canada, the federal government, provinces, territories and communities, are taking action to reduce greenhouse gas emissions and build greener economies powered by clean energy that will be more resilient and sustainable. Yukon will be part of this national and global shift, and we will continue to work collaboratively with governments around the world to take collective action on this global issue.

OVERVIEW OF THE STRATEGY



Mount Decoeli.

The Government of Yukon developed *Our Clean Future* in partnership with Yukon First Nations, transboundary Indigenous groups and Yukon municipalities over the course of three years. Over that time, the partner group gathered four times to establish a vision and values for *Our Clean Future* and to prioritize the areas we should focus on over the next 10 years to respond to the climate emergency. As a result of this collaborative process, the strategy reflects multiple perspectives, worldviews and ideas.

In order to reach each of the objectives that we have set for the next 10 years, all Yukoners need to take part. *Our Clean Future* lays out the specific, tangible actions that the Government of Yukon will take to work toward these objectives. Several Indigenous and municipal partners have also put forward actions they will take to continue to lead the way toward a clean future.

Our Clean Future focuses on the next 10 years until 2030, even though we know that we need to continue to act far past 2030. In fact, our efforts on climate change will need to get more significant as time passes. However, by focusing on the next 10 years, we are holding ourselves accountable to quickly and urgently take the steps that are needed

now to begin addressing the climate emergency. This near-term focus can be complemented by a longer-term, multi-generational perspective of climate change often taken by Indigenous people that recognizes how our actions will support environmental stewardship and healthy communities for generations to come.

***Our Clean Future* has been informed by ideas and feedback we received from the public and stakeholders during two rounds of engagement in fall 2018 and 2019. For more information, please refer to the What We Heard reports available on [EngageYukon.ca](https://engage.yukon.ca).**

Our vision is to come together as leaders to address climate change by building thriving, resilient communities powered by renewable energy and supported by a sustainable green economy that protects and restores our natural environment.

The steps that we take to achieve our collective vision will be shaped by the following core values established by the Government of Yukon with participating Yukon First Nations, transboundary Indigenous groups and Yukon municipalities:

For all Yukoners

We are building a brighter future for the collective, long-term benefit of all Yukoners today and for those to come, inclusive of ethnicity, culture, language, gender, sexuality, age, ability, education, income and other identity factors.

Empower everyone

We will foster partnerships, collaboration, information-sharing and capacity-building to empower all governments, organizations, businesses and individuals to take action.

Raise awareness

All Yukoners should be aware of climate change, energy and the economy and how they can contribute to building a more sustainable, resilient future.

Be accountable

We will outline specific, measurable and time-bound actions to achieve our collective goals, along with the necessary human and financial resources to implement and monitor them and regular reporting on progress.

Support reconciliation

We will support reconciliation by protecting the unique spiritual relationship that Indigenous people have with the land through strong action on climate change. We will also support self-determination and strengthen relationships between Indigenous and non-Indigenous governments, organizations and individuals through open communication and partnerships.

Respect our natural environment

We will recognize the inherent value and importance of our natural environment and prioritize solutions that protect, conserve and harness natural capital and ecosystem services.


Make informed decisions


We will make informed decisions that respectfully bring together traditional, scientific and local knowledge and Indigenous ways of knowing, doing and being.


No “one size fits all” approach


Our actions will reflect Yukon’s unique strengths and challenges by supporting community-based projects that make sense in their local context.

We will work toward four goals that will help us achieve our vision for a clean future:

1.  Reduce Yukon's greenhouse gas emissions.

2.  Ensure Yukoners have access to reliable, affordable and renewable energy.

3.  Adapt to the impacts of climate change.

4.  Build a green economy.

Taking action on these four goals will support healthy people, communities and ecosystems. By reducing greenhouse gas emissions and building a green economy that protects and restores the natural environment, we will uphold our joint responsibilities as stewards of the land while supporting sustainable economic wellbeing for future generations. Our actions will also support Yukoners to continue practicing traditional and cultural activities that are being threatened by climate change, supporting physical, mental and spiritual wellbeing.

The following sections describe each goal in more detail and lay out the targets that we will work toward.



The Hart River in winter.

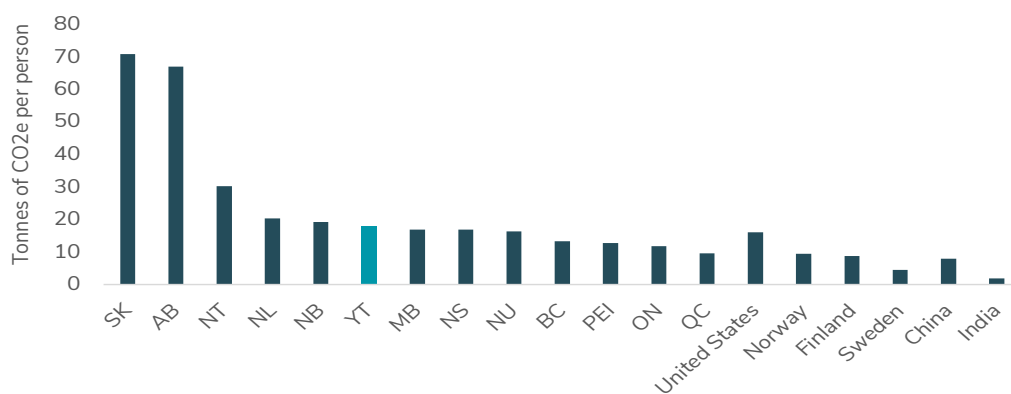
Reducing greenhouse gas emissions

The issue

Climate change is caused by the release of greenhouse gases – like carbon dioxide and methane – primarily from human activities that burn fossil fuels. These activities range from driving vehicles and heating buildings to commercial and industrial processes.

While Yukon’s total greenhouse gas emissions are relatively low because of our small population (0.1 per cent of Canada’s emissions), our per person emissions of around 18 tonnes per person are the sixth highest in Canada and higher than many other countries. It is important that we do our part to reduce the greenhouse gas emissions that are causing climate change.

Figure 1. Comparison of greenhouse gas emissions per person in Canadian provinces and territories (2017)¹ and a selection of other countries (2018).²



1 Estimated based on provincial and territorial emissions in Canada’s National Inventory Report and population statistics from Statistics Canada.
 2 Crippa, M. et al., 2019. Fossil CO₂ and GHG emissions of all world countries - 2019 Report. Publications Office of the European Union, Luxembourg, ISBN 978-92-76-11100-9, doi:10.2760/687800, JRC117610.



In Yukon, greenhouse gas emissions mostly come from transportation and heating, with a smaller amount from industry, electricity generation, waste and other areas. Yukon's greenhouse gas emissions are calculated using two main sources of information. The Government of Canada's National Inventory Report, which reports greenhouse gas emissions across the country, is combined with information about fossil fuel sales in Yukon collected by the Yukon Bureau of Statistics to provide the most accurate picture of Yukon's emissions.

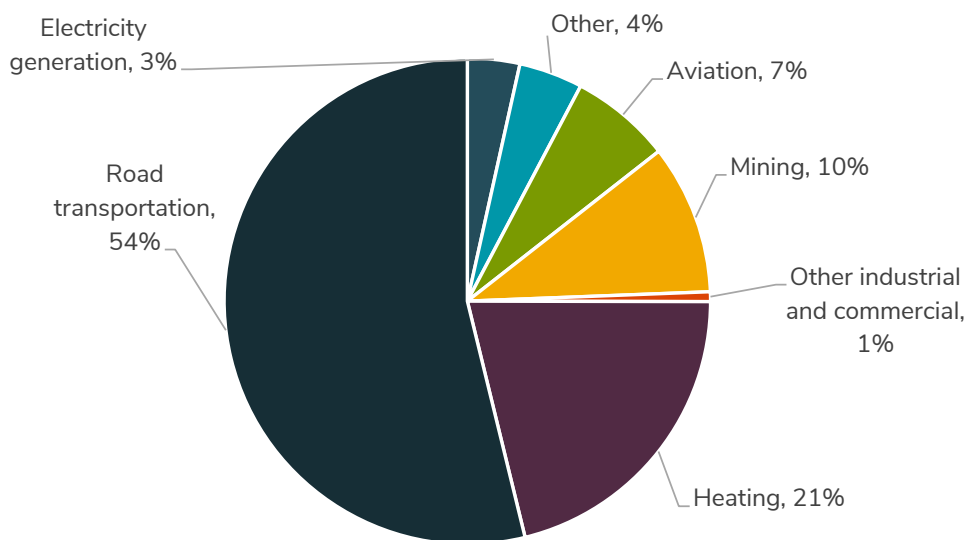


Figure 2. Yukon's sources of greenhouse gas emissions (2017)³.

Yukon's greenhouse gas emissions only account for emissions that are produced within Yukon's borders. For example, a truck that drives from British Columbia to Yukon to deliver food will produce greenhouse gas emissions in both British Columbia and Yukon. By looking at truck logs that report how many kilometres were driven in Yukon, we can figure out how much of the truck's emissions count toward Yukon's total. Greenhouse gas emissions are tracked and reported on the basis of political borders to avoid double counting when reporting Canadian or global emissions.

³ Government of Yukon, 2020. Greenhouse gas emissions in Yukon.



Our targets

By 2030, we will reduce Yukon's total greenhouse emissions from transportation, heating, electricity generation, other commercial and industrial activities, waste and other areas so that our emissions in these areas are 30 per cent lower than they were in 2010.

This is an ambitious and achievable target that is aligned with Canada's international commitment under the Paris Agreement.

While this greenhouse gas reduction target will ensure we see a decrease in emissions from transportation, heating and other areas, we also need a plan to address greenhouse gas emissions from mining, which were 10 per cent of Yukon's total emissions in 2017.

We will work with industry to set a target for greenhouse gas emissions from placer and quartz mining by the end of 2022 that will see Yukon mines produce fewer emissions of greenhouse gases across their lifecycle for every kilogram or kilotonne of material produced.

This intensity-based target will encourage industry to look for innovative ways to reduce energy use and greenhouse gas emissions from mining, regardless of how many or few mines are in operation at any time.

Reaching these targets by 2030 will put Yukon on the path to net-zero greenhouse gas emissions by 2050 for our entire economy. This long-term target is aligned with the substantial level of greenhouse gas reductions that we know is needed worldwide to avoid catastrophic climate change.

The Yukon-wide greenhouse gas reduction target

Reaching the 30 per cent greenhouse gas reduction target will require extensive modernization to our road transportation and heating systems, which together contribute 75 per cent of Yukon's emissions. It will also require significant diversified investments in more renewable electricity generation, creating local jobs and economic opportunities. By reaching this target, we will inspire others by demonstrating that a remote, northern jurisdiction can achieve a significant reduction in greenhouse gas emissions.

We have learned several lessons since the last time greenhouse gas reduction targets were set for Yukon. In the 2012 Climate Change Action Plan Progress Report, twelve different targets were set for a variety of sectors. While the targets related to greenhouse gas emissions from buildings and electricity generation were met, the other targets were not met or could not be reported on due to a lack of available data.

Since that time, we have made improvements to how we gather and report greenhouse gas emissions data. We are now setting targets that we know we can track through available data. We have also conducted modelling work to help us set a greenhouse gas reduction target that is both ambitious and achievable.

Mining plays a central role in the transition to a green economy. Minerals are vital to low carbon technologies – from batteries to wind turbines, solar panels and electric vehicles. Meeting an emissions intensity target will help Yukon's mining industry sustainably produce the materials needed for the global green economy.



Greenhouse gas reduction modelling

In 2017, the most recent year we have data for, Yukon's greenhouse gas emissions, with the exception of mining, were 624 kilotonnes. This is an increase from 2010 emissions of 592 kilotonnes. Based on modelling, we anticipate that Yukon's emissions, excluding mining emissions, could increase to 678 kilotonnes in 2030 if we do not take action. As a result, to reach our 30 per cent greenhouse gas reduction target by 2030, we estimate that we need to reduce our emissions by 263 kilotonnes.

However, forecasting what Yukon's greenhouse gas emissions could be in 2030 is very challenging. Future emissions depend on several factors, including population growth, the economy, and the success of the actions in this strategy, all of which are hard to predict. This makes it very important to track actual greenhouse gas emissions on a regular basis and be flexible and adaptive in our efforts.

Assuming that we need to reduce greenhouse gas emissions by 263 kilotonnes, we expect that the actions outlined in this strategy will get us three-quarters of the way there. To close this gap, we will update our actions in 2024 based on our progress and new information that has emerged. In 2027, we will complete another update based on the newest information on our progress. As part of tracking our progress, we will expect to see Yukon's greenhouse gas emissions go down to at least 10 per cent below 2010 levels by 2025 in order to reach the 2030 target.

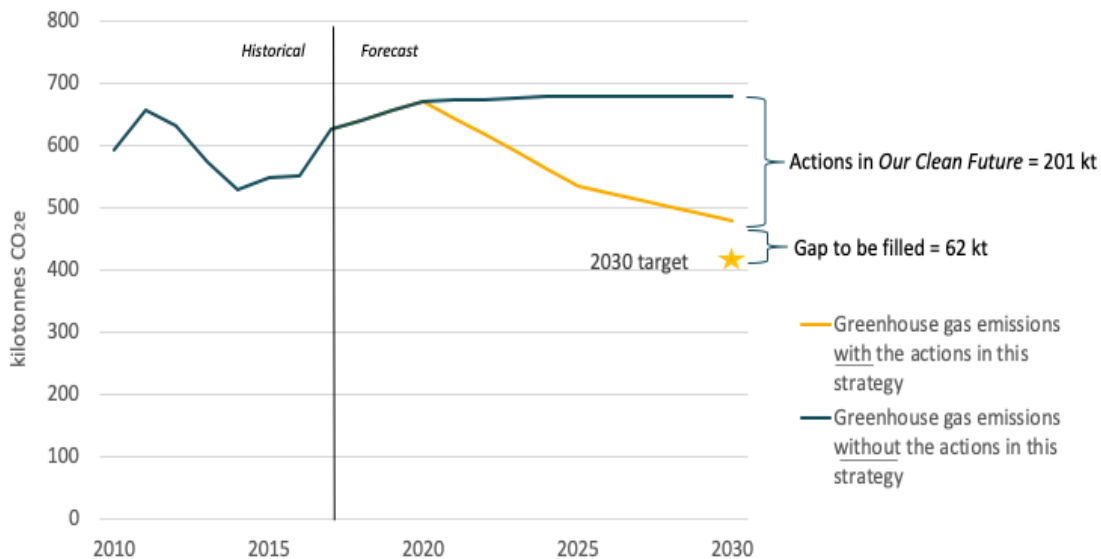


Figure 3. Historical and forecasted non-mining greenhouse gas emissions with and without the actions identified in this strategy.

Anticipated greenhouse gas reductions in 2030 in kilotonnes (kt)

	<p>Increasing the use of zero emission vehicles:</p> <ul style="list-style-type: none"> Requirements for zero emission vehicles to be 10 per cent of light-duty vehicles sales by 2025 and 30 per cent by 2030. Rebates for purchasing zero emission vehicles. Commitment for half of all new cars purchased by the Government of Yukon to be zero emission vehicles. 	<p>13 kt</p>
	<p>Increasing the use of public and active transportation.</p>	<p>6 kt</p>
	<p>Using cleaner fuels for transportation:</p> <ul style="list-style-type: none"> Requirement for diesel fuel to be blended with with biodiesel or renewable diesel beginning in 2025. Requirement for gasoline to be blended with ethanol beginning in 2025. 	<p>59 kt</p>
	<p>Making buildings more energy efficient and switching to renewable heat:</p> <ul style="list-style-type: none"> Funding, rebates and low-interest financing for retrofits. Requiring new buildings to be significantly more energy efficient. 	<p>12 kt</p>
	<p>Conducting energy efficiency retrofits and installing renewable heating systems in Government of Yukon buildings.</p>	<p>5 kt</p>
	<p>Using clean electricity:</p> <ul style="list-style-type: none"> Requiring 93 per cent of the electricity on the main Yukon grid to come from renewable sources on average. Reducing the use of fossil fuels for electricity generation in off-grid communities by 30 per cent through community-based renewable energy projects. Substituting some of the diesel used to generate electricity with clean diesel alternatives like renewable diesel or biodiesel. 	<p>79 kt</p>
		<p>10 kt</p>
		<p>4 kt</p>
		<p>Total* 201 kt</p>
	<p>GHG reduction needed to reach 30 per cent target</p>	<p>263 kt</p>

*The total does not match the sum of the individual policies because of policy interactions where two or more policies contribute to the same greenhouse gas reduction.



The mining intensity target

From 2009 to 2017 – the period of time for which we have reliable greenhouse gas emissions data for Yukon – emissions from placer and quartz mining have varied from year-to-year depending on the amount of mining activity in the territory. These annual fluctuations can be seen in Yukon’s total greenhouse gas emissions as well, which is the direct outcome of increases or decreases to mining emissions as well as the indirect impact that mining activity has on overall economic activity in the territory. Overall, mining emissions have ranged from 10 to 15 per cent of Yukon’s total emissions over this period.

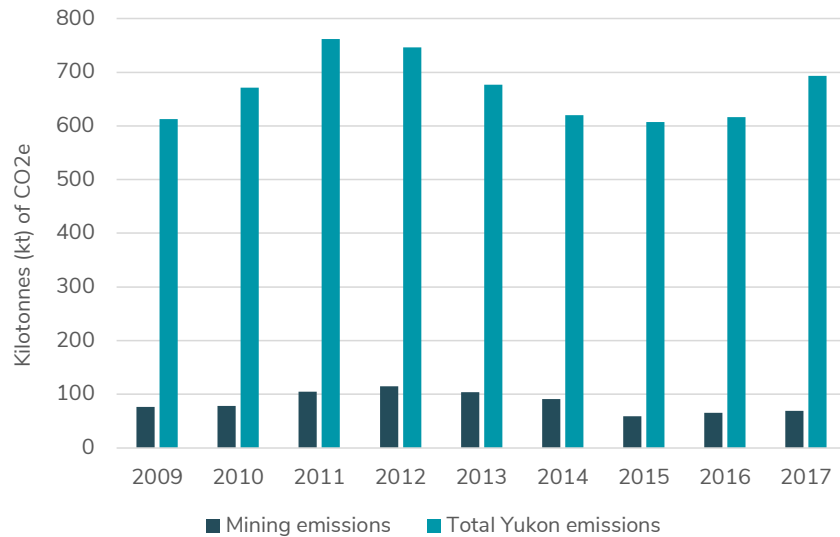


Figure 4. Yukon’s total greenhouse gas emissions and the portion of emissions from mining from 2009 to 2017.⁴

The year-to-year variability of Yukon’s mining emissions makes it difficult to set a maximum level of greenhouse gas emissions from mining to be reached by a certain date. If mining activity were to decrease, total mining emissions could reach the target without requiring any improvements to how mines operate. If mining activity were to increase, the target could become unachievable.

Unlike an absolute greenhouse gas reduction target, an intensity-based target that establishes a desired level of greenhouse gas emissions per unit of material produced will encourage operational efficiencies regardless of how many or how few mines are in operation at any one time.

In addition, establishing a tailored approach for mining emissions eliminates the possibility for a substantial change in mining activity to skew our efforts to reduce emissions from other parts of Yukon’s economy. For example, if mining emissions were part of the Yukon-wide greenhouse gas reduction target, a significant decrease in mining activity could help us to reach the 2030 target without needing to make as many improvements to our transportation and heating systems.

⁴ Government of Yukon, 2020. Greenhouse gas emissions in Yukon.



Caribou herd.

While a tailored intensity-based approach to mining emissions makes sense for the reasons noted above, it is important to set up a system that works. The Government of Yukon will work with industry to set the mining intensity target, or targets, for placer and quartz mining by 2022. During that time, we will consider challenges like the different types of mining operations in Yukon, how to accurately track placer gold production and how to account for greenhouse gas emissions across the entire mine lifecycle from development through to closure and remediation. These are challenging issues that will take time to think through. We will also assess whether the current actions in *Our Clean Future* are sufficient to reach the target that is set, or whether additional actions need to be taken.

As we do this work, we will keep in mind the intensity-based targets for mining in Canada's Output-Based Pricing System. The Output-Based Pricing System is designed to encourage industrial emitters to innovate and reduce their greenhouse gas emissions while maintaining competitiveness and protecting against carbon leakage. Quartz mines in Yukon may be part of Canada's Output-Based Pricing System depending on their size, which is why it will be important for both intensity-based approaches to be coordinated.

When designing climate policy, it is important to avoid unintentionally creating carbon leakage. Carbon leakage occurs when companies or industries shift their operations to other parts of the world that have less stringent climate policies. The result of carbon leakage is that global greenhouse gas emissions may not go down, or may even increase, depending on the situation.



Power lines running along highway.

Ensuring reliable, affordable and renewable energy

Electricity

The issue

In Yukon, historically we have met over 90 per cent of our electricity needs each year with clean, renewable power because of our large supply of hydroelectricity.⁵ As Yukon's economy and communities grow, and as Yukoners increasingly invest in electric vehicles and electric heating technologies, demand for electricity will grow.

All but four of Yukon's communities are connected to the same electrical transmission network, referred to as the Yukon Integrated System or the main electricity grid. Most of the generation and high voltage transmission of electricity on the main grid is managed by the Yukon Energy Corporation, while most distribution is the responsibility of ATCO Electric Yukon. The four communities not connected to the main electricity grid – Beaver Creek, Burwash Landing/Destruction Bay, Watson Lake and Old Crow – are served by four micro-grids that have been primarily powered by diesel generators operated by ATCO Electric Yukon.

5 As demonstrated by annual submissions to the Yukon Utilities Board by the Yukon Energy Corporation and ATCO Electric Yukon.



Figure 5. Yukon's electrical generation facilities and transmission lines. Figure provided by the Yukon Energy Corporation.



Our targets

For Yukon's main electricity grid, we will aspire to see 97 per cent of the electricity we use come from renewable sources by 2030.

This includes electricity used by mines that are connected to the grid. This target is consistent with the bold vision in the Yukon Energy Corporation's 10-year renewable electricity plan, released in draft form in January 2020.

For the communities that are not connected to the main electricity grid, we will reduce diesel use for electricity generation by 30 per cent by 2030, compared to 2010.

We will also substitute some of the diesel fuel that continues to be used with clean alternatives like biodiesel and renewable diesel.

To make sure the lights turn on when we need them and that we are able to heat our homes – even on the coldest days of winter – we will also have the necessary backup power on hand. Today, fossil fuels like diesel and natural gas are best suited for backup power because they are quick and reliable. Over time, technological improvements and efforts to be more energy efficient will reduce the amount of fossil fuels we need to have as backup energy.

How we will meet them

To meet Yukon's renewable electricity targets, we need to invest in more electricity generation capacity, which could range from wind and solar to hydroelectricity projects.

For the main Yukon grid, the Government of Yukon will set a minimum regulatory requirement for the Yukon Energy Corporation to generate at least 93 per cent of electricity from renewable sources on average. It will then be up to the Yukon Energy Corporation to determine the best way to meet or exceed this target.

For off-grid communities, the Government of Yukon will continue to work in partnership with Yukon First Nations, communities and ATCO Electric Yukon to establish community-based renewable electricity projects in order to reduce diesel use for electricity generation by 30 per cent by 2030. Efforts to substitute some of the diesel that continues to be used for electricity generation with clean diesel alternatives like biodiesel and renewable diesel will help us reduce greenhouse gas emissions even further.

Investments in new renewable electricity generation will create local jobs and opportunities, but electricity rates may increase. This is in part because significant capital investments will be needed. It is also because the full costs of using and relying on diesel and other fossil fuels – like air pollution, greenhouse gas emissions and fuel spills – are not reflected in the fees we currently pay for these energy sources.

The Government of Yukon will strive to minimize the impact of any electricity rate increases on Yukoners by helping individuals, families and businesses use energy more efficiently. We will also work with Yukon's electrical utilities to facilitate energy-efficient practices and reduce demand at peak times. This will reduce the amount of new electricity generation infrastructure that needs to be built and the related impacts on electricity rates.

The Yukon Energy Corporation released a draft version of its 10-year renewable electricity plan, "Electricity for 2030," in January 2020. The plan identifies the electricity generation and storage projects that are needed to exceed the 93 per cent regulatory requirement that will be established under *Our Clean Future*. The Yukon Energy Corporation expects that its plan will result in 97 per cent renewable electricity on the main grid on average by 2030. For more information, visit yukonenergy.ca.



Dempster Highway. Photo: Fritz Mueller.

Transportation and heating

The issue

Two-thirds of the energy we use for transportation and heating comes from fossil fuels. Over the next 10 years, we need to reduce our reliance on fossil fuels in these areas.

Our targets

By 2030, we will meet 50 per cent of our heating needs with renewable energy sources. For transportation, we expect to see emissions from road transportation go down by at least 30 per cent by 2030, compared to 2010, to reach the overall greenhouse gas reduction target for Yukon.

How we will meet them

We will meet these targets through efficiency improvements to reduce energy demand, switching to clean electricity for some of our transportation and heating needs, developing local renewable heat sources like wood energy, and using cleaner transportation fuels.



Adapting to climate change

The issue

We are already experiencing significant changes to our climate. Since 1948, temperatures in northern Canada have increased by 2.3 degrees Celsius, with temperature rise being most rapid in Yukon and the Northwest Territories⁶. This is close to three times the rate at which global temperatures are rising. Over the same period, rain and snowfall increased by six per cent in Yukon and has become more unpredictable⁷.

Some climate change impacts we have experienced, and will continue to experience, are:

- Permafrost thaw, which is damaging buildings and roads, changing landscapes and affecting ecosystems;
- Changes to weather and conditions on the land, which are reducing access to country foods, deepening food security concerns, and impacting health and cultural identities;
- More frequent extreme weather events, which can destroy habitats and homes and cause flooding;
- More severe forest fires, which pose a risk to communities and affect ecosystems and wildlife; and
- Glacier melt, which is affecting river flow patterns, water temperatures and aquatic health.

Adapting to climate change involves making informed, forward-looking decisions to minimize the negative impacts that climate change may have on our health, wellbeing, ways of life, and livelihoods while also taking advantage of new opportunities that may arise. In Yukon, effective adaptation will save lives, support healthy ecosystems, minimize damage to buildings and infrastructure, and protect Indigenous cultures and ways of life.

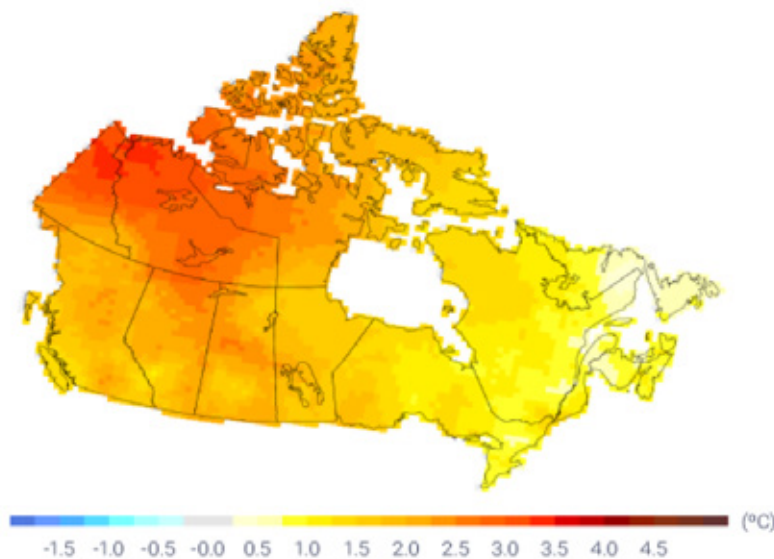


Figure 6. Change in annual temperature across Canada from 1948 to 2016. Figure from Canada's Changing Climate Report.

6 Government of Canada, 2019. Canada's Changing Climate Report.

7 Streicker, J., 2016. Yukon Climate Change Indicators and Key Findings 2015. Northern Climate ExChange, Yukon Research Centre.



Our target

By taking action to adapt to climate change, including impacts we are already experiencing and those yet to come, we will make sure that Yukon is highly resilient to the impacts of climate change by 2030.

To track progress toward this target, the Government of Yukon will work with Indigenous and municipal partners to assess how exposed Yukoners are to climate impacts, and how climate change will impact people and communities in different ways. We will also assess the ability of our built, natural and social systems to moderate potential damages, take advantage of opportunities, and cope with the consequences of climate change in the territory. Things we may track as part of this work could be the number of communities that have prepared climate change adaptation plans or the number of Yukoners that are living in high-risk areas.

Our work with Indigenous and municipal partners will also inform a common understanding of what it means to be climate resilient, as well as the ways in which communities are already resilient because of strong community connections, an intimate understanding of the land, or other sources of strength.

How we will meet it

We will increase Yukon's resiliency to climate change by taking action to reduce our exposure to climate hazards like wildfires and flooding, decrease how sensitive we are to those hazards, and increase our capacity to adapt. Our actions will be informed by Indigenous, local and scientific knowledge and ways of knowing, doing and being. Our efforts will touch on

infrastructure, housing, land use planning, emergency preparedness, ecosystem health, food security, and health and wellbeing in recognition of how broadly climate change can affect our lives. We will work with partners across Yukon to share information, build capacity to understand and respond to climate change impacts, and plan for the future.

When planning for the climatic changes we expect to see, it is important to recognize that there is a range of possible climate impacts depending on global greenhouse gas emissions. In order to make sure we are planning conservatively, we will assume that global greenhouse gas emissions will continue along their current path when forecasting how Yukon's climate will change. Right now, global greenhouse gas emissions are most consistent with the Intergovernmental Panel on Climate Change's RCP8.5 pathway, which projects 2.6 to 4.8 degrees of warming globally by the end of the century. Even if we do not experience this level of warming, Yukoners will benefit from the investments in people and communities that climate change adaptation involves.

A risk-based and human-centered approach

Not all individuals, households or communities will be affected in the same way by the changes that are coming. Our ability to adjust to changing conditions, reduce potential damages and take advantage of new opportunities differs from person to person and community to community. For example, resilience



Carcross Commons opening.

to climate change is affected by the condition of our homes, whether we rent or own, our ability to afford insurance, the health conditions we live with, and the presence of friends, family and community to support us and provide comfort during difficult times. As a result, climate change can amplify socioeconomic stresses that individuals, households and communities are already facing.

In *Our Clean Future*, our approach to adaptation recognizes the importance of reducing the risks we all face while also working to alleviate the conditions that can make people more vulnerable to climate change. This includes working to improve human health, food security and housing to enhance the resilience of Yukoners and Yukon communities.



Fireweed Market.

Building a green economy

The issue

A green economy creates economic prosperity while protecting and restoring the natural environment in order to build a healthy, prosperous future for generations to come. In a green economy, energy and other resources are used efficiently, with minimal waste. Economic activities and operations release fewer carbon dioxide and other greenhouse gas emissions. A green economy is also resilient and inclusive so that communities, businesses and individuals can adapt to the impacts of climate change and take advantage of new opportunities.

There are many opportunities for Yukoners as we build a green economy in the territory alongside national and international efforts. As local, national and global demand for green goods and services increases, there are opportunities for Yukon innovators, entrepreneurs and businesses to supply clean energy and find ways to use energy more efficiently. The knowledge economy will grow as Yukoners come up with innovative solutions to local and global challenges. Efforts to use energy and other resources more efficiently will also reduce operating costs for Yukon businesses.

What we will do

Yukon's approach to a green economy focuses on:

- Helping Yukon businesses, individuals and communities plan for, and benefit from, the economic opportunities that will arise as we take action on climate change and energy;
- Supporting innovation and the knowledge economy and recognizing the achievements of local green businesses and organizations; and
- Making it easier for businesses, communities and entrepreneurs to access funding and support for green projects across Yukon.



Building a green economy will help Yukoners take care of the natural environment so it can support long-term jobs and economic activity, as well as continued traditional and cultural activities and strong mental and physical wellbeing. A green economy recognizes principles upheld by Indigenous people for millenia that people must respect and take care of the land so that the land can take care of us.

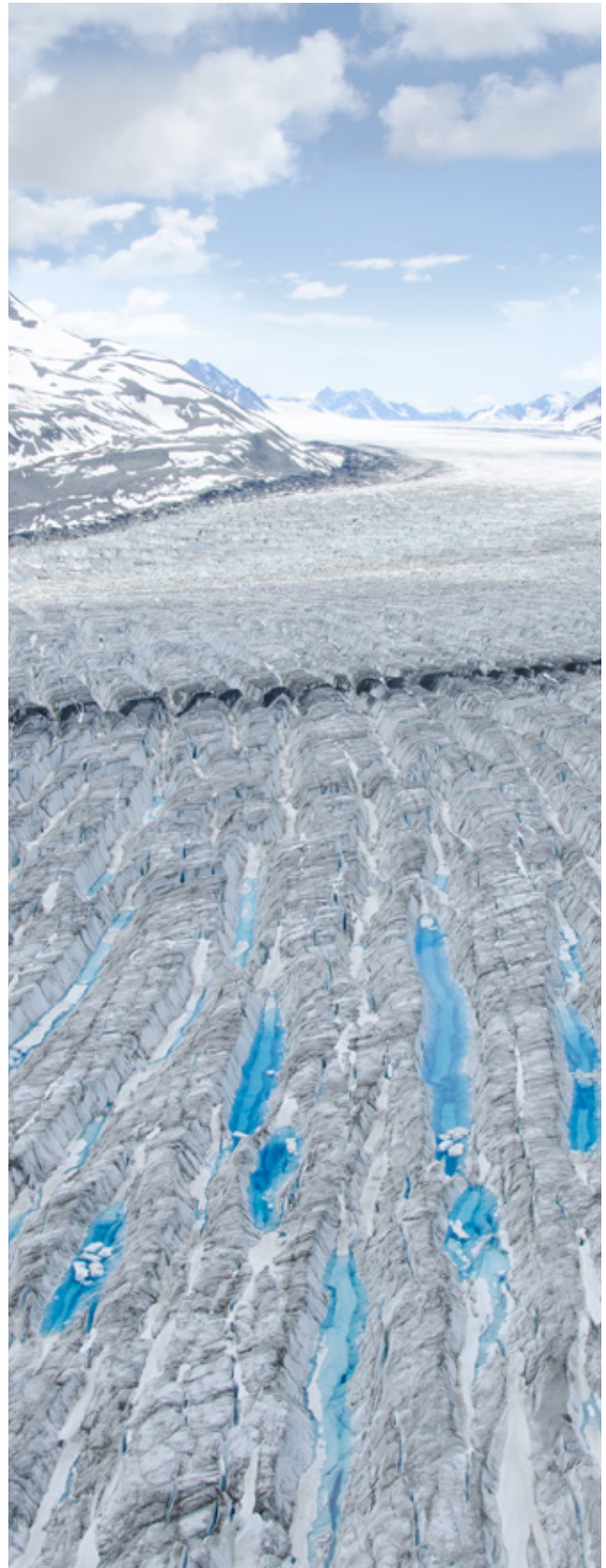
Tracking progress

We will track our progress toward building a green economy by looking at changes to greenhouse gas emissions per person and greenhouse gas emissions per unit of real gross domestic product over time. These indicators will tell us whether Yukon's economy is becoming more efficient in terms of the greenhouse gas emissions we generate relative to the number of people living in the territory and the size of our economy.

Carbon pricing

A price on carbon pollution is one way that the Government of Canada is stimulating the green economy. The Government of Canada's carbon levy encourages individuals and businesses to invest in low-carbon alternatives and fosters innovation.

The Government of Yukon's carbon rebate returns carbon pricing revenues from the Government of Canada to Yukon individuals, businesses, First Nations and municipalities. The Government of Yukon's carbon rebate upholds the principles of the Pan-Canadian Framework on Clean Growth and Climate Change while protecting vulnerable families, and ensuring the territory remains competitive as we transition to a green economy. For businesses, Yukon's carbon rebate includes a super green credit to encourage future investments in renewable energy generation and energy efficiency.



Kaskawulsh Glacier.

Taking action

Our Clean Future: is organized into seven areas:



Transportation



Homes and buildings



Energy production



People and the environment



Communities



Innovation



Leadership

Within each area, there are several objectives that we will work toward over the next 10 years that reflect the priorities of the Government of Yukon and participating municipal and Indigenous partners.

Each objective contributes to one or more of these four goals:



Reducing greenhouse gas emissions;



Ensuring Yukoners have access to reliable, affordable and renewable energy;



Adapting to the impacts of climate change; and



Building a green economy.

Actions

To reach each objective, we need to take specific, tangible actions. The Government of Yukon's actions in this strategy lead by example through major improvements to government vehicles and buildings while also supporting Indigenous governments and organizations, municipalities, businesses and individuals to take collaborative action to build a strong, healthy future.

The actions in *Our Clean Future* are the Government of Yukon's top priorities for addressing climate change, meeting energy needs and building a green economy over the next 10 years. For each action, the Government of Yukon department or agency responsible for leading the implementation of that action is listed for transparency and accountability. In many cases, other departments will be involved as well.

In addition to the Government of Yukon's actions, Indigenous and municipal partners have been invited to identify actions they will take to work toward our collective objectives set out in *Our Clean Future*. Several partner actions are included in this version of *Our Clean Future* and the door remains open for partners to identify additional actions in the future.

Timing

The Government of Yukon's actions will be updated every three to four years. This will ensure the strategy remains relevant from now until 2030 and that we remain up-to-date on best practices and new developments.

Funding

To implement many of the Government of Yukon's actions in this strategy, we will continue to depend on partnerships with the federal government. In particular, we hope to receive continued federal support for investments in clean transportation, building energy efficiency, renewable energy projects, emergency preparedness and response, and community adaptation.

In partnership with the federal government, the Government of Yukon plans to spend over \$500 million over the next 10 years to implement *Our Clean Future*. This investment will put Yukon on the path to significantly reduce our greenhouse gas emissions from transportation, heating, electricity generation and other areas, prepare our communities for ongoing climate change, and enable all Yukoners to participate in these efforts by providing necessary financial and technical support.

Over \$400 million of this investment will directly support economic development and recovery by investing in local renewable energy, infrastructure and building projects, encouraging purchases of green technologies like zero emission vehicles, and supporting Yukon businesses and workers to develop new skills for the green economy.

Government of Yukon departments and agencies

- CS: Community Services
- EcDev: Economic Development
- EDU: Education
- EMR: Energy, Mines and Resources
- ENV: Environment
- ECO: Executive Council Office
- FIN: Finance
- HSS: Health and Social Services
- HPW: Highways and Public Works
- JUS: Justice
- PSC: Public Service Commission
- TC: Tourism and Culture
- YDC: Yukon Development Corporation
- YEC: Yukon Energy Corporation
- YHC: Yukon Housing Corporation



Tr'ondëk Hwëch'in Farm.

Working together

Community leadership and successful partnerships are key to addressing climate change. In Yukon, many impactful climate change and energy projects have been driven by community champions and supported by collaborative partnerships between governments, organizations, businesses and individuals. These projects range from the Old Crow solar project, Kluane wind project and solar panels in Mayo to the Tr'ondëk Hwëch'in First Nation and Carcross-Tagish First Nation community farms. Moving forward, Indigenous governments and organizations, municipalities, businesses, organizations, individuals, youth and Elders will all continue to play key roles building a clean future for Yukon.

Indigenous and municipal leadership

The objectives set out in each of the seven areas of *Our Clean Future* were identified as priorities for Yukon by the Government of Yukon and participating Yukon First Nations, transboundary Indigenous groups and Yukon municipalities. Several Indigenous and municipal partners have put forward ambitious actions they will take to work toward the objectives that are particularly relevant to their communities, complementing and building on the Government of Yukon's efforts in those areas and demonstrating continued community leadership.

In addition to the actions highlighted below, the Council of Yukon First Nations and the Assembly of First Nations-Yukon Region are leading the development of a Yukon First Nations climate change vision and action plan that will complement *Our Clean Future* by providing a First Nations-led perspective on climate action in Yukon.

Indigenous- and municipal-led actions by area

	Purchase an electric or hybrid vehicle and install an electric vehicle charging station in Mayo.	Village of Mayo
	Implement challenge-based campaigns to encourage behavioral shifts on walking and active transportation, as well as on topics such as vehicle use, energy use, and waste.	City of Dawson
	Develop a program and educational campaign for reducing winter idling.	City of Dawson
	Retrofit the Village of Mayo Community Centre to be more energy efficient based on an energy assessment completed for the facility.	Village of Mayo
	Explore opportunities to replace diesel heat in Old Crow with fast-growing, locally harvested willow distributed through a district heat system.	Vuntut Gwitchin Government
	Implement a water metering and bleeder reduction program.	City of Dawson
	Partner with the University of Saskatchewan to improve and develop more comprehensive energy audits in the Gwich'in communities.	Gwich'in Tribal Council
	Develop an energy action plan for the Inuvialuit Settlement Region by 2021.	Inuvialuit Regional Corporation.
	Build a 1.5 megawatt (MW) solar farm in Beaver Creek that will displace up to 60 per cent of the diesel used for electricity generation in the community.	White River First Nation
	Build a solar farm in Old Crow that will meet 24 per cent of Old Crow's electricity demand and enable the diesel generators to be turned off for 2,200 hours each year.	Vuntut Gwitchin Government
	Set up a wind measurement tower in summer 2020 to investigate the potential for a wind energy project to meet Old Crow's electricity demand in the winter months.	Vuntut Gwitchin Government
	Work with partner organizations to convert the Gwich'in Camp from full reliance on diesel power to hybridized renewable energy sources.	Gwich'in Tribal Council
	Continue to heat the Village of Mayo swimming pool using solar energy.	Village of Mayo
	Work with Polar Knowledge Canada to create and mobilize knowledge of sustainable energy, food sovereignty and revitalization and promotion of Indigenous Traditional Knowledge.	Gwich'in Tribal Council

	Create municipal incentives for green buildings, businesses, and business practices.	City of Dawson
	Develop a climate change strategy for the Inuvialuit Settlement Region by 2021.	Inuvialuit Regional Corporation
	Conduct urban fire smarting.	Village of Haines Junction
	Develop a Community Energy and Implementation Plan for Old Crow that will identify activities to reduce reliance on fossil fuels and achieve the 2019 Vuntut Gwitchin First Nation General Assembly resolution to reach carbon neutrality by 2030.	Vuntut Gwitchin Government
	Create a reserve fund for projects related to climate change, energy, and green economy, and fund it from the municipal carbon tax rebate.	City of Dawson
	Set improved service standards with respect to waste pickup, plowing, and bleeders.	City of Dawson
	Explore and implement a comprehensive composting program to encourage and/or incentivize increased diversion of food waste.	City of Dawson
	With support from Gender Equality Canada, work with women artisans in Beaufort Delta communities to address the systemic gaps that are hindering their business's opportunities.	Gwich'in Tribal Council
	Continue looking for partnerships to build innovative technical solutions to decrease the diesel dependency in the Gwich'in Settlement Area.	Gwich'in Tribal Council
	Create an Energy and Sustainability Analyst position by 2020 to help build the Council of Yukon First Nations' capacity to assist Yukon First Nations in the pursuit of projects, programs and policies that support renewable energy and reduce greenhouse gas emissions as well as provide guidance and visioning on the creation of a Yukon First Nations Climate Strategy and help strengthen Yukon First Nations energy literacy and capacity overall.	Council of Yukon First Nations
	Develop a policy for municipal operations and events, including with respect to resource use, waste, and energy efficiency.	City of Dawson
	Continue to run the Climate Future Exchange program to connect northern youth to their counterparts from other regions and enable them to create community-based projects that use Indigenous knowledge to reduce carbon footprint in the Gwich'in Settlement Area.	Gwich'in Tribal Council
	Continue to host energy and climate change terminology workshops.	Inuvialuit Regional Corporation

Indigenous and municipal partners will continue to be able to put forward actions they will take to support a clean future through the online version of this strategy.

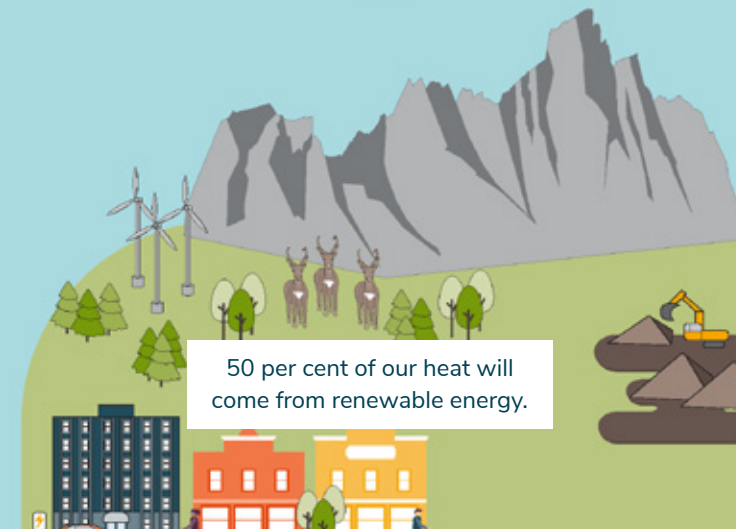
Individuals, businesses and organizations

Our Clean Future also creates many opportunities for individuals, businesses and organizations to take part in reducing emissions, enhancing energy security, making Yukon more resilient, and building a green economy through financial support, information and advice. Here are some of the ways you can participate and help ensure we are able to build the clean, resilient Yukon we want for the future.




Yukon in 2030


Here are some of the ways Yukon could look different in 2030 as a result of the objectives and actions in this strategy.




50 per cent of our heat will come from renewable energy.




Our mining industry will produce fewer emissions of greenhouse gases per unit of production.




Native species will be able to move across the landscape in response to climate change.



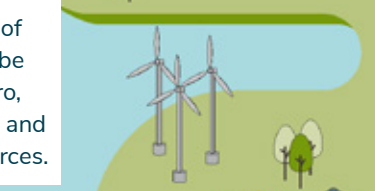
Our homes and buildings will be substantially more energy efficient.




We will be better prepared to respond to emergencies.



More people will use public and active transportation.



Up to 97 per cent of our electricity will be generated by hydro, wind, solar, biomass and other renewable sources.



We will grow more of our food locally.



Businesses will capitalize on opportunities for green innovation and entrepreneurship.

There will be 4,800 zero emission vehicles in Yukon.






Area #1: Transportation




Currently, almost all the energy we use to meet transportation needs comes from fossil fuels. As a result, transportation by road and air is the largest source of greenhouse gas emissions in Yukon, contributing 61 per cent of total emissions.⁸ Close to 90 per cent of transportation emissions come from road transportation, with a relatively equal split between personal vehicles and commercial and industrial vehicles, including those that transport food, fuel and other products. The remaining transportation emissions are from aviation.



Our approach to transportation will make it easier for Yukoners to use clean forms of transportation, reducing fuel costs for individuals, families and businesses as well as greenhouse gas emissions. We will respond to the impacts of climate change on our transportation systems to ensure Yukon’s economy remains strong and resilient. Our transportation objectives are supported by efforts in other areas of this strategy that will reduce our dependence on imported fossil fuels and other products by supporting local goods and services.




Transportation objectives at a glance



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Increase the number of zero emission vehicles on our roads.

- 
Reduce the lifecycle carbon intensity of transportation fuels.

- 


Increase the use of public and active transportation.

- 

Reduce the carbon footprint from medium and heavy-duty vehicles.

- 


Be more efficient in how and when we travel.

- 

Ensure roads, runways and other transportation infrastructure are resilient to the impacts of climate change.

⁸ Government of Yukon, 2020. Greenhouse gas emissions in Yukon.



Increase the number of zero emission vehicles on our roads.

Increasing the use of electric vehicles and other vehicles with low or zero greenhouse gas emissions is one of the most significant ways we can reduce emissions. There are already several electric vehicles in Yukon, and they are a reliable and affordable transportation solution, even in our cold climate. Supporting a broader transition to zero emission vehicles will allow Yukoners to continue to go where and when they need to while reducing greenhouse gas emissions, improving air quality, and supporting local dealerships. While electric vehicles have been shown to have lower lifecycle greenhouse gas emissions than fossil fuel vehicles⁹, Yukon will support efforts to address other social and environmental concerns with electric vehicle supply chains and to continue reducing the lifecycle emissions of electric vehicles.

Our target for 2030 is to have at least 4,800 zero emission vehicles registered in the territory – or approximately one in every eight passenger vehicles on the road. Our commitment to meet at least 93 per cent of Yukon’s electricity needs from renewable sources, on average, while aiming for 97 per cent, will ensure these vehicles are powered sustainably.

ACTIONS

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| T1. Work with local vehicle dealerships and manufacturers to establish a system by 2024 to ensure zero emission vehicles are 10 per cent of light duty vehicle sales by 2025 and 30 per cent by 2030. | EMR |
| T2. Ensure at least 50 per cent of all new light-duty cars purchased by the Government of Yukon are zero emission vehicles each year from 2020 to 2030. | HPW |
| T3. Provide a rebate to Yukon businesses and individuals who purchase eligible zero emission vehicles beginning in 2020. | EMR |
| T4. Continue to install fast-charging stations across Yukon to make it possible to travel between all road-accessible Yukon communities by 2027 and work with neighbouring governments and organizations to explore options to connect Yukon with BC, NWT and Alaska. | EMR |
| T5. Provide rebates to support the installation of smart electric vehicle charging stations at residential, commercial and institutional buildings in collaboration with Yukon’s public utilities beginning in 2020. | EMR |
| T6. Require new residential buildings to be built with the electrical infrastructure to support Level 2 electric vehicle charging beginning on April 1, 2021. | CS |
| T7. Draft legislation by 2024 that will enable private businesses and Yukon’s public utilities to sell electricity for the purpose of electric vehicle charging. | EMR |
| T8. Continue to run public education events and campaigns to raise awareness of the benefits of electric vehicles and how they function in cold climates. | EMR |



Reduce the lifecycle carbon intensity of transportation fuels.

Even with more zero emission vehicles on the roads and more people walking, cycling or taking the bus, liquid fossil fuels like gasoline and diesel are expected to be the main source of energy for transportation in Yukon over the next 10 years. As a result, a key way to reduce greenhouse gas emissions from transportation in the near term is to reduce the lifecycle carbon intensity – the greenhouse gas emissions per unit of energy provided – of the fuels we use. We can reduce the lifecycle carbon intensity of gasoline and diesel by blending them with ethanol, biodiesel or renewable diesel, which are renewable fuels produced from organic matter like agricultural waste and plant oils. Renewable fuels produce fewer greenhouse gas emissions than fossil fuels, even when taking a lifecycle approach that accounts for the emissions associated with land clearing and other agricultural practices that may be needed to produce the fuels.^{10,11} Renewable fuels also protect local air quality because they produce fewer harmful tailpipe emissions than gasoline and diesel.

ACTIONS

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| T9. Require all diesel fuel sold in Yukon for transportation to align with the percentage of biodiesel and renewable diesel by volume in leading Canadian jurisdictions beginning in 2025, aiming for around 20 per cent. | ENV |
| T10. Require all gasoline sold in Yukon for transportation to align with the percentage of ethanol by volume in leading Canadian jurisdictions beginning in 2025, aiming for around 10 per cent. | ENV |

Increase the use of public and active transportation.

Increasing the number of people who walk, bike and use public transit is another key way to lower greenhouse gas emissions. By reducing the number of people driving vehicles, investments in public and active transportation also reduce congestion, improve air quality and help people lead active, healthy lives. Making it easier to get around without a vehicle can also contribute to more inclusive communities by providing an accessible and affordable way to get from one place to another. While transportation options in and around Whitehorse are key to reducing greenhouse gas emissions, we will also look for public and active transportation solutions in and between Yukon’s smaller communities.

Our target is for the percentage of commuting trips in Whitehorse made by drivers in single occupant vehicles to decrease to 55 per cent of all trips by 2031, as set out in the City of Whitehorse’s Transportation Demand Management Plan.

10 Natural Resources Canada, 2020. “Biodiesel.” <https://www.nrcan.gc.ca/energy/efficiency/energy-efficiency-transportation-and-alternative-fuels/alternative-fuels/biofuels/21609>

11 Natural Resources Canada, 2020. “Ethanol.” <https://www.nrcan.gc.ca/energy/efficiency/energy-efficiency-transportation/alternative-fuels/biofuels/ethanol/3493>



ACTIONS

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|------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| T11. Provide rebates to encourage the purchase of electric bicycles for personal and business commuting beginning in 2020. | EMR |
| T12. Continue to support municipalities and First Nations to make investments in public and active transportation infrastructure. | CS |
| T13. Continue to incorporate active transportation in the design of highways and other Government of Yukon transportation infrastructure near communities. | HPW |

Reduce the carbon footprint from medium and heavy-duty vehicles.

Yukoners rely heavily on goods brought up from southern Canada and around the world. While we are making progress toward meeting more of our needs locally, shipping of food, fuel, and other products will continue to be an important part of our lives and economy, given Yukon's relative remoteness. We also rely on medium duty vehicles like school buses, road clearing equipment and mail delivery vans to keep communities safe and accessible and to meet our daily needs. We will work to find efficiencies and reduce emissions from medium and heavy-duty vehicles.

ACTIONS

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| T14. Update the Government of Yukon's heavy-duty vehicle fleet by 2030 to reduce greenhouse gas emissions and fuel costs. | HPW |
| T15. Begin a pilot project in 2021 to test the use of short-haul medium and heavy-duty electric vehicles for commercial and institutional applications within Yukon. | EMR |
| T16. Train the Government of Yukon's heavy equipment operators on efficient driving techniques for all new equipment by 2022. | HPW |



Be more efficient in how and when we travel.

The COVID-19 pandemic has proven that we can be much more efficient in how and when we travel. It is possible for a significant number of people to work from home, reducing congestion and air pollution while continuing to deliver results. Large meetings and conferences can successfully be held through videoconferencing technology, rather than flying thousands of kilometres for a few hours of interaction. As we emerge from the COVID-19 pandemic, we will continue to invest in technology that allows us to move ideas rather than people and to pursue long-term changes to how we work and travel. Recognizing that face-to-face interactions are important, when we do travel, we will make sure we do so efficiently such as by using efficient vehicles and carpooling with colleagues or friends. These efforts will help Yukoners save money while also reducing greenhouse gas emissions, cutting back on congestion, reducing our dependence on fossil fuels, making roads safer and reducing air pollution.

Safer and more efficient driving behaviours like slower acceleration, more measured braking and driving the speed limit can increase the fuel efficiency of your vehicle by up to 25 per cent.

Source: Government of Canada, 2020. "Fuel Efficient Driving Techniques."

ACTIONS

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|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| T17. Expand the Government of Yukon's video and teleconferencing systems and require employees to consider these options when requesting permission for work travel by 2022. | HPW |
| T18. Implement new policies to enable Government of Yukon employees in suitable positions to work from home for the longer term by 2022. | PSC |
| T19. Develop a planning and engagement strategy by 2022 to change how and where Government of Yukon employees work by providing choices and flexibility through a modern workplace. | HPW |
| T20. Develop and implement a system by 2021 to coordinate carpooling for Government of Yukon staff travelling by vehicle for work within Yukon. | HPW |
| T21. Develop guidelines for the Government of Yukon Fleet Vehicle Agency's fleet by 2021 to ensure appropriate vehicles are used for the task at hand. | HPW |
| T22. Incorporate fuel efficiency into purchasing decisions for Government of Yukon fleet vehicles beginning in 2020 to reduce greenhouse gas emissions and fuel costs. | HPW |
| T23. Expand virtual health care services to Whitehorse medical clinics by 2022 in order to improve access to healthcare while reducing greenhouse gas emissions from travel to and from Whitehorse. | HSS |
| T24. Continue to operate the Yukon Rideshare program to make carpooling and other shared travel easier. | ENV |



Ensure roads, runways and other transportation infrastructure are resilient to the impacts of climate change.

Climate change is already affecting Yukon’s transportation infrastructure. Thawing permafrost damages our roads, runways and bridges and increases maintenance costs. Landslides, flooding, forest fires and other natural hazards can wash out roads, cutting communities off from critical supply routes. It is important that we address the impacts of climate change on our transportation infrastructure to ensure we stay safe and connected and to protect our economy and livelihoods.

ACTIONS

T25. Complete a climate change vulnerability study of the road transportation network by 2023 to inform the development of standards and specifications.	HPW
T26. Establish a geohazard mapping program for major transportation corridors and prioritize sections for targeted permafrost study by 2022.	EMR
T27. Analyze flood risk along critical transportation corridors at risk of flooding by 2023.	ENV
T28. Continue to conduct climate risk assessments of all major transportation infrastructure projects above \$10 million ¹² , such as through the federal Climate Lens assessment.	HPW



Alaska Highway.

12 \$10 million dollars is the threshold established by the Government of Canada for climate risk assessments through the Climate Lens.



Area #2: Homes and buildings





Many Yukoners spend a lot of time inside, whether at home, at work or at school. How we design, use and heat these buildings affects our comfort, safety, productivity, health and finances.





Right now, many buildings use more energy than they need to and heating buildings accounts for 21 per cent of Yukon’s greenhouse gas emissions. Taking steps to use less energy saves money, stimulates the economy and supports green jobs in construction. Improving energy efficiency is a key step toward significant greenhouse gas reductions through heating highly efficient buildings with low-carbon energy sources like wood and clean electricity.

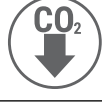



The Government of Yukon will lead by example in this area by undertaking energy efficiency retrofits and installing renewable heating systems to reduce greenhouse gas emissions from Government of Yukon buildings by 30 per cent by 2030, compared to 2010.

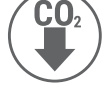


At the same time as we make our buildings more efficient, we can ensure they are designed to be more resilient to fires, floods, permafrost thaw and heat stress. This will reduce long-term repair and maintenance costs, health risks like mould, and improve public safety.

Homes and buildings objectives at a glance

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Improve the energy efficiency and climate resilience of existing homes and buildings.

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Ensure **new** homes and buildings are built to be low-carbon and climate-resilient.

- 



Increase the use of biomass and other renewable energy sources for heating.

- 


Use energy more efficiently and better align energy supply and demand.

The Government of Yukon will invest \$30 million dollars on average each year in energy retrofits for homes and buildings. This will include financial support for individuals and businesses, support for First Nations and municipal governments, and retrofits to Government of Yukon buildings.



Improve the energy efficiency and climate resilience of existing homes and buildings.

Many existing homes and buildings can be improved to use less energy and to be more resilient to the impacts of climate change. The energy efficiency of our homes and buildings is affected by insulation, draftiness, and the mechanical and electrical systems we use for heat and power. Similarly, how many trees surround our buildings affects our vulnerability to forest fires while our foundation and roof affect our resilience to flooding and permafrost thaw. Taking action to improve existing homes and buildings will lead to many benefits for Yukoners, from saving money on heating and electricity to improving comfort and safety. It is important that our efforts in this area are accessible to all Yukoners, including tenants and home and building owners.

Our target is to complete 2,000 residential, commercial and institutional energy efficiency retrofits by 2030.

The amount of money paid by insurance companies in Canada for property damage due to severe weather has increased from \$400 million per year in the 1980s to over one billion dollars per year. This is contributing to substantial increases in premiums for home and property insurance across Canada.

Source: *Globe and Mail*, 2018. "The costs of climate change are rising."



Home with solar panels.



ACTIONS

H1.	Conduct retrofits to Government of Yukon buildings to reduce energy use and contribute to a 30 per cent reduction in greenhouse gas emissions by 2030.	HPW
H2.	Conduct energy assessments of Government of Yukon buildings to identify opportunities for energy efficiency and greenhouse gas reductions, with the first period of assessments completed by 2025 and the second period completed by 2030.	HPW
H3.	Provide low-interest financing to support energy efficiency retrofits to homes and buildings beginning in 2021.	EMR & CS
H4.	Continue to provide financial support to assist First Nations and municipalities to complete major energy retrofits to institutional buildings across Yukon, aiming for 30 retrofits by 2030.	EMR
H5.	Continue to provide financial support for municipal and First Nations energy efficiency projects.	CS
H6.	Continue to work with Yukon First Nations to retrofit First Nations housing to be more energy efficient.	YHC
H7.	Continue to retrofit Government of Yukon community housing to reduce greenhouse gas emissions in each building by 30 per cent.	YHC
H8.	Continue to provide rebates for thermal enclosure upgrades and energy efficient equipment to reduce energy use in homes and commercial buildings.	EMR
H9.	Assess ways to ensure Yukoners can access adequate insurance for fires, floods and permafrost thaw by 2023.	CS
H10.	Develop and implement a plan by 2024 to conduct routine monitoring of the structural condition of Government of Yukon buildings located on permafrost.	HPW
H11.	Assess options to provide financial support for actions to improve the climate resiliency of homes and buildings by 2023.	ENV



Ensure new homes and buildings are built to be low-carbon and climate-resilient.

It is also important that new buildings are built to be low-carbon and climate-resilient from the beginning. Making sure new homes and buildings are built to energy efficient standards and with the potential impacts of climate change in mind will save money for homeowners and building owners over the long run, decrease pressure on the electrical grid, reduce greenhouse gas emissions and improve safety and comfort.

Across Canada, governments are working together toward net-zero energy ready buildings. This means buildings will be designed to be so energy efficient they could be heated and powered with just the energy from onsite renewables. In general, this means that new buildings in Canada will be designed to be 50 to 70 per cent more energy efficient than currently required by the 2015 National Building Code. The Government of Yukon will work with the Government of Canada to ensure new codes are suitable to northern Canada. Close to two-thirds of new homes in Whitehorse are already being built near this standard thanks to rebates from the Energy Solutions Centre.

ACTIONS

H12. Work with the Government of Canada to develop and implement building codes suitable to northern Canada that will aspire to see all new residential and commercial buildings be net zero energy ready by 2032.	CS
H13. Continue to require all new Government of Yukon buildings to be designed to use 35 per cent less energy than the targets in the National Energy Code for Buildings, in accordance with the Government of Yukon’s Design Requirements and Building Standards Manual.	HPW
H14. Adopt and enforce relevant building standards by 2030 that will require new buildings to be constructed to be more resilient to climate change impacts like permafrost thaw, flooding and forest fires.	CS
H15. Continue to conduct climate risk assessments of all major building projects over \$10 million that are built or funded by the Government of Yukon.	CS & HPW
H16. Continue to provide rebates for new homes that are net zero energy ready, aiming for 500 homes by 2030.	EMR



Increase the use of biomass and other renewable energy sources for heating.

Increasing how much of our heating needs are met through local renewable sources will reduce greenhouse gas emissions and support the local economy. In the near term, our renewable heat options are electricity produced from renewable sources as well as wood and other forms of biomass energy. In the longer term, other forms of renewable heat like geothermal energy may also help meet our heating needs. When it comes to electric heating, we will focus on efficient, smart electric heating technologies like air source heat pumps with utility-controlled electric thermal storage that use less electricity than electric baseboards and have a significantly lower impact on peak electricity demand. For wood heating, we will focus on large commercial and government buildings with significant heating demand that will use large, efficient biomass systems with fewer air emissions. Local, sustainably harvested biomass to meet this heating demand is a low-carbon and renewable energy source that will support jobs in Yukon's wood products industry and help to reduce the risk of forest fires around Yukon communities.

Our targets are to replace 1,300 residential fossil fuel heating systems with smart electric heating systems and to support businesses, organizations and local governments to install 20 commercial and institutional biomass heating systems by 2030.

Biomass energy use can be a win-win for greenhouse gas reduction and climate change adaptation. The Government of Yukon has made it easier for Yukoners to use wood from Firesmarting and other forest fuel risk reduction efforts to heat homes and buildings. In particular, changes to the permits issued under the Forest Resources Act now allow private companies to collect wood from land clearing projects.

ACTIONS

H17. Install renewable heat sources such as biomass energy in Government of Yukon buildings by 2030 to create long-term demand for renewable heating and contribute to a 30 per cent reduction in greenhouse gas emissions.	HPW
H18. Provide low-interest financing to install smart electric heating devices in residential, commercial and institutional buildings in collaboration with Yukon's public utilities beginning in 2021.	EMR & CS
H19. Provide low-interest financing to install biomass heating systems in commercial and institutional buildings beginning in 2021.	EMR & CS
H20. Continue to assist First Nations to complete feasibility studies for the installation and operation of biomass heating systems.	EMR
H21. Continue to provide rebates for residential, commercial and institutional biomass heating systems and smart electric heating devices and increase the current rebate for smart electric heating devices beginning in 2020.	EMR



H22. Work with local industry to install and test 25 electric heat pumps with backup fossil fuel heating systems or utility-controlled electric thermal storage from 2020 to 2023.	EMR
H23. Identify regulatory improvements that could support the growth of Yukon's biomass energy industry during the review of the Forest Resources Act by 2022.	EMR
H24. Amend the <i>Air Emissions Regulations</i> by 2025 in order to regulate air emissions from commercial and institutional biomass burning systems to minimize the release of harmful air pollutants.	ENV
H25. Analyze and compare the climate benefits of different types of biomass harvesting and use in Yukon by 2021 in order to identify recommended forest management practices to guide sustainable and low-carbon biomass use.	ENV

Use energy more efficiently and better align energy supply and demand.

Energy use is affected by how much we heat our buildings, whether we leave the lights on when we leave the house, what appliances we buy, and other behaviours. Using energy more efficiently will help Yukoners save money and reduce greenhouse gas emissions. It is also important to align the timing of when people use energy with when energy is available to us through demand-side management. For example, we can shift energy use away from peak times to other times when fewer people are using energy.

Demand-side management (DSM) includes a variety of tools to adjust demand for electricity. DSM initiatives can reduce the amount of electricity that people use at peak times or shift energy use away from peak times. DSM tools include financial incentives like time-of-use rates, utility control of household and business energy use, and education to change behaviour.

ACTIONS

H26. Provide direction to the Yukon Utilities Board in 2020 to allow Yukon's public utilities to partner with the Government of Yukon to pursue cost-effective demand-side management measures.	YDC
H27. Establish a partnership between the Government of Yukon, Yukon Energy Corporation and ATCO Electric Yukon by 2021 that will collaborate on the delivery of energy and capacity demand-side management programs.	EMR & YEC
H28. Complete the Peak Smart pilot project by 2022 to evaluate the use of smart devices to shift energy demand to off-peak hours.	YEC
H29. Implement an education campaign for Government of Yukon building occupants and visitors by 2026 to encourage more energy efficient behaviours.	HPW



Area #3: Energy production

While over 90 per cent of the electricity we generate in Yukon comes from renewable sources, only 26 per cent of the heat energy we use is from renewable sources, with the rest coming from non-renewable sources like diesel and propane. Overall, about 24 per cent of the energy we use in Yukon comes from renewable resources.¹³

Our approach to energy production will see more renewable energy produced for both heating and electricity, combined with upgrades to the electricity grid and energy storage to make the best use of seasonal resources. This will allow us to continue to heat and power our lives with clean energy even as electricity demand grows and as we use more electricity for transportation and heating. Our efforts to produce more energy from renewable sources will work hand-in-hand with efforts to make our homes and buildings more energy efficient in order to decrease our dependence on fossil fuels and minimize the amount of electricity we generate from diesel and natural gas. At the same time, we will make sure our electricity generation, distribution and transmission infrastructure is climate-resilient so Yukoners continue to have access to safe and reliable power.

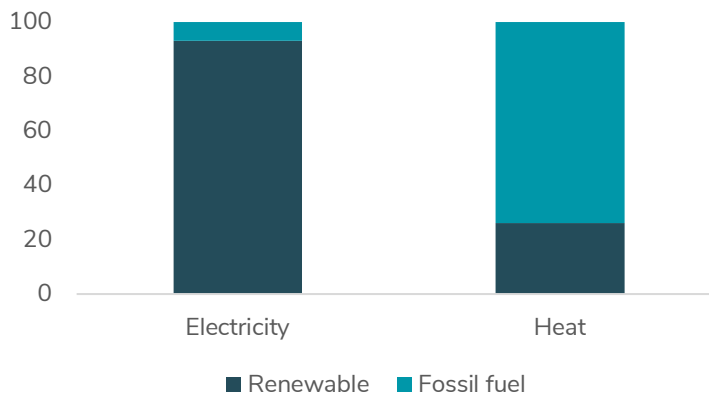


Figure 7. The percentage of electricity and heat energy that is produced by renewable sources and fossil fuels (2016).

Energy production objectives at a glance



Increase the supply of electricity generated from renewable sources.



Support local and community-based renewable energy projects for heating and electricity.



Ensure electricity generation, transmission and distribution infrastructure is resilient to the impacts of climate change.

13 Government of Yukon, 2018. Yukon's Energy Context.



Increase the supply of electricity generated from renewable sources.

It is important to increase the amount of electricity we produce from renewable sources as electricity demand grows and as we increasingly use electricity for transportation and heating needs. While most of our electricity currently comes from hydro, we also have other renewable energy sources available like wind, wood, solar and geothermal. Producing more of our electricity with local renewable energy will make us more self-sufficient and less vulnerable to changing fuel prices. Making sure we continue to supply most of our electricity through renewable sources is key to reducing our greenhouse gas emissions.

Through the Government of Yukon’s Independent Power Production Policy and Micro-generation Program, Yukon communities and households can generate clean electricity and sell power to the grid. Participating households in the Micro-generation Program have earned close to \$700 per year on average by selling excess electricity to the grid.

ACTIONS

E1. While aiming for an aspirational target of 97 per cent by 2030, develop legislation by 2023 that will require at least 93 per cent of the electricity generated on the Yukon Integrated System to come from renewable sources, calculated as a long-term rolling average.	EMR & YDC
E2. Require some of the diesel used to generate electricity on the Yukon Integrated System and in off-grid communities to be substituted with clean diesel alternatives like biodiesel and renewable diesel beginning in 2025, aiming for around 20 per cent.	EMR
E3. Update the <i>Public Utilities Act</i> by 2025 to ensure an effective and efficient process for regulating electricity in Yukon.	JUS & EMR
E4. Install renewable electricity generation systems in 5 Government of Yukon buildings in off-grid locations by 2025 to reduce reliance on diesel-generated electricity.	HPW
E5. Evaluate the potential to generate renewable electricity at remote historic sites co-managed by the Government of Yukon and Yukon First Nations by 2022.	TC



Support local and community-based renewable energy projects.

Local and community-based renewable energy projects create jobs and opportunities across Yukon, support self-sufficiency and help Yukoners be part of the clean energy economy. Through this strategy, we will support communities and individuals to produce local renewable energy for heating and electricity, while creating opportunities for local businesses and contractors. We will also stay up-to-date on new and emerging energy technologies that may be able to meet Yukon's needs in the future, such as nuclear energy, and increase our knowledge of renewable and low-carbon energy sources that may be available in Yukon.

Our target is to have an operating independent power production project in all off-grid communities by 2030 in order to reduce diesel use for electricity generation by 30 per cent by 2030.

ACTIONS

E6. Continue to provide financial and technical support for Yukon First Nations, municipalities and community organizations to undertake community-led renewable energy projects.	YDC
E7. Work with Yukon's public utilities to continue to implement the Independent Power Production Policy that enables independent power producers, including Yukon First Nations and communities, to generate and sell electricity to the grid.	EMR
E8. Increase the limit of the Standing Offer Program under the Independent Power Production Policy from 20 gigawatt hours (GWh) to 40 GWh by 2021 to support additional community-based renewable energy projects on Yukon's main electrical grid.	EMR
E9. Develop a framework by 2022 for First Nations to economically participate in renewable electricity projects developed by Yukon's public utilities.	YDC
E10. Continue to deliver the Micro-generation Program in collaboration with Yukon's public utilities, targeting 7 megawatts (MW) of installed renewable electricity capacity by 2030.	EMR
E11. Develop legislation by 2023 to regulate geothermal energy development in Yukon.	EMR
E12. Research the potential to use geothermal energy for heating and electricity, with a focus along Yukon fault systems, by 2025.	EMR



Transformer station.

Ensure electricity generation, transmission and distribution infrastructure is resilient to the impacts of climate change.

The impacts of climate change and extreme weather events can negatively affect electricity infrastructure like power lines. Climate change is also affecting rain, snowfall and glacier melt in Yukon, which in turn can impact our hydro-based electricity system. The Government of Yukon, through the Yukon Energy Corporation, is responsible for the safe and effective management of our electrical systems. Proactive climate change risk management is an operating imperative. This involves conducting research, forecasting future conditions, identifying risks and opportunities, developing adaptation options, and incorporating climate change into long-term planning and decision making.

ACTIONS

- | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| E13. Improve modelling of the impacts of climate change on hydroelectricity reservoirs by 2021 and incorporate this information into short, medium and long-term forecasts for renewable hydroelectricity generation. | YEC |
| E14. Develop a climate change adaptation plan for the Yukon Energy Corporation by 2022 that will identify risks and appropriate responses to ensure Yukon's main electrical grid is resilient to the impacts of climate change. | YEC |
| E15. Implement a glacier monitoring program in 2020 to improve our ability to predict the impacts of glacier melt on hydrological systems and hydroelectricity generation. | EMR |



Area #4: People and the environment

Yukoners have a strong connection to the land.

We value and depend on our natural spaces, wild animals, and clean air and water. For Indigenous people in particular, a long history of taking care of the land has shaped and continues to shape Indigenous cultures, identities and worldviews. The connection that Indigenous people have with the land, water, and animals is also a source of strength, understanding, and resilience.

Because of the intimate relationship between people and the environment, particularly the relationships nurtured by Indigenous people over generations, climate change has significant ripple effects on ways of life, cultural identities and physical and mental health. Furthermore, the impacts of climate change interact with other pressures on ecosystems like land development, resource extraction and forest fires, resulting in cumulative effects on people and the environment. These effects can diminish other important services that healthy ecosystems provide for us like clean air and pure water.

As the climate continues to change, it is important to improve our understanding of how the natural environment is responding, using a combination of Indigenous, local and scientific knowledge and ways of knowing, doing and being. Prepared with this information, we will take action to protect the ecosystems, wild species and their habitats that are so important to Yukoners. We will strive to maintain and strengthen cultural practices, recognizing that our ways of life are often interconnected with the land. We will also protect and enhance the health and wellbeing of Yukoners, which are dependent on the health of the natural environment.

People and the environment objectives at a glance



Respond to the impacts of climate change on wild species and their habitats.



Maintain our ability to practice traditional and cultural activities on the land.



Protect and enhance human health and wellbeing in a changing climate.



Respond to the impacts of climate change on wild species and their habitats.

Climate change is putting pressure on ecosystems, wild species and their habitats. Species ranges are projected to shift, snowpacks may become deeper, and streams are anticipated to change in flow, temperature and sediment levels. Extreme weather events, changes to the availability of prey and forage, and conditions favourable to new and invasive species will negatively affect native species and existing ecosystems, adding to the cumulative stress they are experiencing. In response, wild species may migrate to a new location, adapt, persist or decline. Ecosystems will be reconfigured with new assemblages of plants and animals, resulting in different and unpredictable ecological processes. Some ecosystems, such as wetlands, will be more susceptible than others. It is important that we better understand how climate change is affecting the natural environment and take action to minimize the impacts on ecosystems, wild species and their habitats, and the people that depend on them.

ACTIONS

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| P1. Establish a standardized method to determine the health status of wetland ecosystems and complete a pilot study to measure the baseline conditions of various reference wetlands by 2022 to better understand future changes. | ENV |
| P2. Adapt existing surface and groundwater monitoring networks by 2026 to be able to track long-term trends in water quality and quantity in a changing climate. | ENV |
| P3. Continue to lead and participate in projects that improve our understanding of how climate change is affecting ecosystems, wild species and their habitats. | ENV & EMR |
| P4. Continue to monitor key species that will provide an indication of the impacts of climate change on Yukon ecosystems and expand monitoring to more taxonomic groups. | ENV |
| P5. Continue to incorporate climate change into the design of protected and managed areas using landscape conservation science in order to allow native species to move, adapt and survive in the face of climate change. | ENV |
| P6. Continue to track new and invasive species to Yukon that could impact ecosystems and biodiversity. | ENV |



People searching for species during BioBlitz in Tombstone Territorial Park.



Maintain our ability to practice traditional and cultural activities on the land.

Many people go out on the land to hunt, fish, harvest, travel from one community to another, and pursue other traditional and cultural activities. These activities are a critical part of culture and identity, particularly for Indigenous people. However, climate change is threatening the safety of these activities as weather, ice and trail conditions become increasingly unpredictable, even for highly experienced people in our communities. Climate change is also affecting when and where animals, fish and berries can be harvested, and may negatively impact the health or abundance of the species upon which people have traditionally relied. As the climate continues to change, cultural and historic sites that reflect past relationships with the land may be uncovered or threatened. We will work to maintain the ability to practice traditional and cultural activities on the land in order to sustain Yukon's rich and vibrant cultures and identities.

ACTIONS

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| P7. Work with Yukon First Nations to develop a tailored hunter education program by 2023 that can be adapted and delivered by Yukon First Nations for First Nations citizens. | ENV |
| P8. Work collaboratively with First Nations and the Inuvialuit to document information from historic sites and culturally important places on the North Slope that are at risk due to climate change by 2024. | TC |



Cow moose with two calves.



Protect and enhance human health and wellbeing in a changing climate.

Climate change can negatively affect physical and mental health in many ways. Increased smoke from wildfires, new diseases, contaminants released from thawing permafrost, warmer temperatures and challenges harvesting traditional foods can all lead to respiratory, nutritional and other health concerns. At the same time, changes to the natural environment and to land-based cultural practices and livelihoods can cause anxiety and distress as we see our home changing before our eyes. It is important that we understand how climate change is impacting our health and take action to minimize these impacts. Beyond minimizing impacts, we should also strive to enhance our health and wellbeing so that we are more resilient to the changes that are coming.

ACTIONS

P9. Provide training to healthcare providers beginning in 2023 to be better able to identify and treat the physical and mental health impacts of climate change.	HSS
P10. Incorporate climate-related illnesses like heat stroke, respiratory illness, and vector-borne diseases into the new 1Health Yukon health information system by 2023 to enable tracking of climate-related illnesses in Yukon.	HSS
P11. Expand monitoring of concentrations of particulate matter in the air from biomass burning and forest fires to all Yukon communities by 2023.	ENV
P12. Purchase a moveable clean air shelter by 2021 that can be set up in communities to protect public health during wildfire smoke events.	HSS
P13. Provide financial support to vulnerable Yukoners to install cleaner air spaces in their homes and buildings beginning in 2023 to provide protection from wildfire smoke.	YHC
P14. Analyze existing information on food insecurity in Yukon by 2023 to inform the development of a system to gather food insecurity data into the future.	HSS & EMR



Area #5: Communities









Dawson City.




Yukon is home to many unique, vibrant communities where we live, work, play and celebrate our cultures.

This strategy takes proactive steps to ensure our communities will be strong and resilient into the future. Our communities will increasingly be places where people walk, cycle and use public transportation to get around and where local businesses thrive. Our communities will be more resilient to the impacts of climate change and increasingly self-sufficient when it comes to food production.

Communities objectives at a glance

    Design our communities to be low-carbon and resilient to the impacts of climate change.

  Ensure we are prepared for emergencies that are becoming more likely due to climate change.

   Supply more of what we eat through sustainable local food production.



Design our communities to be low-carbon and resilient to the impacts of climate change.

The ways our communities are designed affects how easy it is to walk to work, take public transit, or use renewable energy sources for heating and electricity. The design of communities and the underlying infrastructure also affects our ability to provide critical services like healthcare, clean and safe drinking water and waste management. Moving forward, we will focus on making communities more compact and efficient rather than expanding outwards, and make sure our homes are close to the places where we work and play. We will ensure that our communities are designed in ways that reduce our vulnerability to forest fires, permafrost thaw, flooding, drought and other natural hazards that are expected to worsen with climate change.

Building infrastructure to be climate-resilient adds about three per cent to the upfront cost. However, this investment pays back at about four times the amount invested due to lower repair costs and a longer useable lifespan. Engineers and planners can follow the Government of Canada’s Climate Lens guideline to help them design resilient infrastructure.

Source: Global Commission on Adaptation, 2019. Adapt Now: A Global Call for Leadership on Climate Resilience.

ACTIONS

C1. Expand geohazard map coverage to all Yukon communities with a high risk of permafrost thaw by 2025.	EMR
C2. Develop flood probability maps for all Yukon communities at risk of flooding by 2023 that incorporate climate change projections.	ENV
C3. Develop detailed guidelines by 2025 that can be used by the Government of Yukon and partners to develop walkable, bike-friendly and transit-oriented communities.	ENV
C4. Continue to develop, encourage and apply applicable climate resiliency standards to community design and infrastructure development projects built by or receiving capital funding from the Government of Yukon.	CS
C5. Continue to conduct detailed climate change risk assessments of all major community infrastructure projects over \$10 million that are built or funded by the Government of Yukon.	CS
C6. Continue to make recommendations to consider the impacts of climate change in regional land use and local area planning processes, which inform the Government of Yukon’s development permitting and zoning decisions.	EMR
C7. Continue to provide technical and administrative support to Yukon First Nations and municipalities to prepare integrated asset management plans.	EMR



Ensure we are prepared for emergencies that are becoming more likely due to climate change.

Climate change is increasing the likelihood of emergencies like severe forest fires and floods. Taking action to reduce the risk of these events, and ensuring we are prepared if they do happen, is critical. Through this strategy, we will work to build climate-resilient communities across Yukon and to have systems in place to effectively predict and respond to fires, floods and other emergencies like water shortages or landslides that may threaten Yukon communities.

Emergency preparedness is a good investment. As one example, for every dollar invested in effective early warning systems for floods, fires or heatwaves, taxpayers save ten dollars on average in avoided damages.
Source: Global Commission on Adaptation, 2019. *Adapt Now: A Global Call for Leadership on Climate Resilience.*

ACTIONS

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|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----|
| C8. Expand monitoring networks and improve modelling tools to generate reliable daily flood forecasts and relevant warnings for all at-risk Yukon communities by 2024. | ENV |
| C9. Work with First Nations and municipalities to develop Wildfire Protection Plans for all Yukon communities by 2026 and to complete the forest fuel management activities outlined in the plans by 2030. | CS |
| C10. Increase the capacity in Yukon Wildland Fire to prevent wildfires and respond to extended fire seasons by investing in staffing in 2020. | CS |
| C11. Complete hazard identification and risk assessments (HIRAs) for all Yukon communities by 2022 that include climate change risks. | CS |
| C12. Work with First Nations and municipalities to complete emergency management plans for all Yukon communities by 2022 informed by community hazard identification and risk assessments (HIRAs). | CS |
| C13. Develop a territorial disaster financial assistance policy by 2022 to support recovery from natural disasters that result in extensive property damage or disruption to the delivery of essential goods and services. | CS |



Supply more of what we eat through sustainable local food production.

Harvesting and producing more of the food we eat locally increases food security, contributes to the economy, and reduces how much food we need to ship into the territory. Local food production can include community greenhouses and gardens, backyard gardens, larger-scale agriculture and farming and small-scale animal husbandry. All these forms of local food production have an important role to play in a resilient, sustainable future that takes advantage of longer growing seasons and warmer temperatures as our climate changes.

The 2016-2021 Local Food Strategy for Yukon supports a more developed and sustainable local food system in the territory. Our Clean Future highlights the Government of Yukon's continued commitment to many relevant initiatives in the Local Food Strategy, including community food production.

ACTIONS

C14. Incorporate support, where possible, for local food producers into Government of Yukon procurement processes beginning in 2020.	HPW
C15. Continue to provide funding for community gardens and greenhouses, especially in rural communities.	EMR
C16. Continue to provide technical advice to assist First Nations and municipal governments with their agricultural and animal husbandry projects.	EMR
C17. Continue to conduct and provide access to funding for research on how climate change could affect local agriculture.	EMR
C18. Continue to support agricultural producers to adapt to the impacts of climate change, adopt low-carbon practices and use surface water and groundwater efficiently.	EMR



Area #6: Innovation











Northlight Innovation





Innovation is new and improved ways of doing something, whether it is how we generate and use energy, how we manage waste, how we create products or how we interact with one another. Innovation can reduce the environmental impacts of existing industries and support the development of new industries. It drives economic progress and increased productivity, and helps diversify the economy.



Our approach to innovation will see continued support for Yukon's businesses, innovators and entrepreneurs through funding, procurement and skills development. We will also work to make existing industries and activities more sustainable in the long-term, including how we think about and manage waste.

Innovation objectives at a glance

    Support innovation and green business practices.

    Reduce the carbon intensity of mining and ensure mining projects are prepared for the impacts of climate change.

    Enhance the sustainability of Yukon's tourism industry.

  Improve how we manage our waste to move toward a more circular economy.



Support innovation and green business practices.

As we build a green economy, we will support innovation, local business development, and green business practices. Government funding and purchasing decisions will encourage businesses to use greener practices and build climate resilience into their operations, and will create demand for innovative clean technologies. We will also support businesses, organizations and communities interested in pursuing a range of projects that will support green economic development and climate resilience across Yukon. As local, national and global economies become greener, Yukoners will need new entrepreneurial, business and technical skills to fully participate in new economic opportunities. Ensuring Yukoners have these skills by predicting and adaptively assessing skills needs will help ensure equitable participation in the green economy.

The Government of Canada is working with provinces and territories to develop a Canadian greenhouse gas offset system. This system could create an economic opportunity for Yukon businesses, organizations and development corporations to generate and sell carbon offsets within Canada.

ACTIONS

11.	Incorporate greenhouse gas emissions into the decision-making process for Department of Economic Development funding programs by 2022.	EcDev
12.	Update the Government of Yukon's procurement policies and standards in 2020 to better support sustainable and local procurement.	HPW
13.	Identify and develop options to address potential regulatory and policy barriers to the growth of green businesses in Yukon by 2023.	EcDev
14.	Expand the range of relevant professional development offerings by 2023 to enable more Yukoners to participate in the green economy.	EMR
15.	Create an award program by 2022 to recognize the achievements of local green businesses and organizations.	EcDev



Reduce the carbon intensity of mining and ensure mining projects are prepared for the impacts of climate change.

Efforts to improve energy use in all phases of mining from planning to closure – such as using more efficient equipment or generating low-carbon energy onsite – can save money, lower greenhouse gas emissions, and support corporate social responsibility efforts. As demand for metals like copper, iron and lead increases to build more solar panels and other clean energy technologies, it is important that mining activities be energy efficient. We also need to make sure that mining activities are planned and carried out with climate change in mind. Thawing permafrost, increased rainfall and other climate change impacts affect the way a mine should be designed, operated and closed.

ACTIONS

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|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| 16. | Include new provisions in quartz mine licenses by 2022 that will ensure critical mine infrastructure is planned, designed and built to withstand current and projected impacts of climate change. | EMR |
| 17. | Require quartz mines to project their anticipated greenhouse gas emissions, identify measures to reduce emissions, and annually report greenhouse gas emissions through the quartz mine licensing process beginning in 2022. | EMR |
| 18. | Increase the Government of Yukon's participation in intergovernmental initiatives related to mine resiliency, low-carbon mining and innovation by 2021. | EMR |
| 19. | Establish an intensity-based greenhouse gas reduction target for Yukon's mining industry and additional actions needed to reach the target by 2022. | EMR & ENV |



Enhance the sustainability of Yukon’s tourism industry.

The Yukon Tourism Development Strategy, released in November 2018, establishes a vision for tourism to be a vibrant, sustainable component of Yukon’s economy and society for the benefit of future generations. Sustainability is at the heart of the Tourism Development Strategy, with the aim for tourism to provide Yukon with sustainable, diversified growth that balances economic development with environmental, community and cultural values. We will support sustainable tourism by measuring and monitoring sustainable tourism development and taking action based on that information to ensure tourism growth supports healthy communities, preserves our natural environment for future enjoyment, and benefits Yukoners for generations to come.

ACTIONS

110. Establish and implement a framework to measure the sustainability of tourism development in Yukon by 2021.	TC
111. Develop and implement a system to track greenhouse gas emissions from Yukon’s tourism industry by 2021.	TC

Improve how we manage our waste to move toward a more circular economy.

In a circular economy, products are designed to avoid waste and pollution, products and materials are used for longer before being recycled or composted, and natural systems are regenerated. It is different from the usual linear approach of making something, using it and throwing it away. Better waste management is a key part of a circular economy, and an element that Yukon can take action on. Improved waste management includes reducing waste, repairing or remanufacturing products so they can be used longer, recycling the materials in products to use them again and composting organic materials. Moving toward a more circular economy will support economic prosperity with as little environmental impact as possible.

Our targets are to reduce the amount of waste generated per person by 10 per cent by 2030, compared to 2020, and to increase the amount of waste diverted from the landfill per person to 40 per cent by 2025.

ACTIONS

112. Assess options for establishing a comprehensive waste diversion system in Government of Yukon buildings, including reuse, recycling, compost and e-waste collection by 2030.	HPW
113. Develop legislation that will enable the Government of Yukon to restrict or prohibit the production, supply or distribution of appropriate single use bags by 2021.	ENV
114. Design and implement a system for Extended Producer Responsibility by 2025 that will make producers responsible for managing materials through the lifecycle of a product.	ENV







Area #7: Leadership











Drummers at White Pass & Yukon Railway.

Our *Clean Future* aims to empower each and every government, business and individual to take a leadership role in building a healthy, prosperous Yukon for years to come. First and foremost, we will ensure the actions we take as governments in Yukon are consistent with our vision for a healthy, resilient future by considering climate change in all our actions. We will also empower Yukon businesses, organizations, individuals and families to be part of the solution.

Leadership objectives at a glance

    Ensure the goals of this strategy are incorporated into government planning and operations.

    Educate and empower youth as the next generation of leaders.

    Ensure Yukoners have the information needed to make evidence-based decisions.



Ensure the goals of this strategy are incorporated into government planning and operations.

Building a healthy, resilient future is not something that can be done in isolation from government policy. It is important that the goals of this strategy be integrated into all aspects of government planning and operations across Yukon to ensure the actions we take are consistent with our long-term vision.

Following recent upgrades to Yukon’s school curriculum, students learn about climate change from Kindergarten to Grade 12. This includes learning about the causes of climate change, how climate change affects biodiversity and ecosystem health, and learning about climate change from the perspective of Yukon First Nations.

ACTIONS

L1. Create a Clean Energy Act by 2023 that legislates our greenhouse gas reduction targets and our commitments to energy efficiency and demand-side management to hold the Government of Yukon accountable.	EMR
L2. Incorporate a climate change lens into the decision-making process for major Government of Yukon policies, programs and projects by 2021.	ECO
L3. Incorporate climate change risks into Government of Yukon departmental planning processes by 2022.	ENV
L4. Incorporate greenhouse gas emissions and energy efficiency into the process for identifying and prioritizing Government of Yukon building retrofits and new construction projects by 2023.	HPW
L5. Develop and offer climate change training for Government of Yukon employees by 2022.	ENV



Educate and empower youth as the next generation of leaders.

Youth will be most affected by the decisions we make today. Recognizing this, many Yukon youth have already become involved in climate change, energy and green economy initiatives. This strategy will support youth to continue being involved in these important areas, educating and empowering them to step forward as the next generation of leaders. Our approach to empowering and educating youth will respect and reflect Indigenous ways of knowing, doing and being.

ACTIONS

L6. Create a Youth Panel on Climate Change in 2020 that will provide advice and perspectives to the Government of Yukon on climate change, energy and green economy matters that reflects the diversity of Yukon youth.	ECO
L7. Provide mentorship opportunities for Yukon youth to participate in major international climate change and energy events with Government of Yukon staff beginning in 2023.	ENV
L8. Continue to support land-based programs in the Yukon school curriculum that teach First Nations ways of knowing and doing to youth.	EDU



Chunday K'anat'a dancers.



Ensure Yukoners have the information needed to make evidence-based decisions.

Research, knowledge and information to inform evidence-based decision-making will continue to be an important part of our efforts on climate change, energy and green economy. To take effective action, we must understand the problems we are trying to solve and the solutions that are available. This understanding should be based on respectfully bringing together Indigenous, local and scientific knowledge and ways of knowing, doing and being. Over the course of this strategy, our knowledge will evolve with advances in research, science and technology, new local observations, and progress bringing together different perspectives and ways of knowing. Respectful information sharing and collaboration across governments, businesses, organizations and individuals will help us work together to build a clean future.

ACTIONS

L9. Assess climate hazards and vulnerabilities to those hazards across Yukon every three to four years between 2020 and 2030 to prioritize climate change adaptation actions.	ENV
L10. Support the Government of Canada’s work to develop a pan-territorial climate hub by 2030 that will support access to climate data and projections for the north.	ENV
L11. Begin participating in the National Forest Inventory monitoring program in 2022 to gather information about forest carbon stocks, potential biomass energy supply, pest and forest fire risks, and climate impacts on Yukon’s forests.	EMR
L12. Create easy access to technical information and lessons learned about climate change, energy and green economy for governments and stakeholders by 2021.	ENV
L13. Launch a Yukon-wide information or social marketing campaign in 2021 that will educate Yukoners on greenhouse gas emissions, renewable energy, climate change adaptation, and other topics and highlight what Yukoners can do to support climate change initiatives.	ENV

Measuring our progress

The Government of Yukon will publicly report each year on the implementation of *Our Clean Future*. The annual progress reports will include:

- the status of each action in *Our Clean Future*;
- the key indicators of progress below as well as additional indicators or information for each action in the strategy;
- the latest 2030 greenhouse gas emissions forecast for Yukon; and
- any modifications to the actions in *Our Clean Future*.

Annual public reporting combined with a new Clean Energy Act to legislate key targets in *Our Clean Future* will ensure the Government of Yukon remains transparent and accountable to Yukoners as we rise to the challenge of addressing climate change.

Key progress indicators

Goal	Indicator	Target
Reduce Yukon's greenhouse gas emissions.	• Greenhouse gas emissions from transportation, heating, electricity generation, other commercial and industrial activities, waste and other areas.	• 30 per cent reduction by 2030, compared to 2010.
	• Greenhouse gas emissions intensity of mining.	• Target will be established by 2022.
Ensure Yukoners have access to reliable, affordable and renewable energy.	• Percentage of the electricity we use on the main Yukon electricity grid that is generated from renewable sources, calculated as a long-term rolling average.	• A long-term rolling average of 97 per cent by 2030.
	• Litres of fossil fuels used to generate electricity in off-grid communities.	• 30 per cent reduction by 2030, compared to 2010.
	• Percentage of energy used for heating that is from renewable sources.	• 50 per cent by 2030.
	• Greenhouse gas emissions from road transportation.	• 30 per cent reduction by 2030, compared to 2010.
Adapt to the impacts of climate change	• A set of qualitative and quantitative indicators that will reflect Yukon's resilience to climate change.	• Highly climate resilient by 2030.
Build a green economy	• Greenhouse gas emissions per person and per unit of real gross domestic product.	• A decrease from 2020 to 2030.

Key progress indicators will also be tracked and reported for each of the seven areas of *Our Clean Future* (see table at right). Targets associated with the indicators are noted in brackets.

Area	Indicator
Transportation	• Greenhouse gas emissions from transportation.
	• Number of zero emission vehicles registered in Yukon (4,800 by 2030).
	• Carbon intensity of transportation fuels.
	• Percentage of commuting trips made by drivers in single-occupant vehicles (55 per cent by 2031).
	• Number of road kilometres at risk of permafrost thaw that have undergone geohazard mapping.
	• Number of critical transportation corridors that have been analyzed for flood risk.
Homes and buildings	• Greenhouse gas emissions from heating fuel use.
	• Dollars invested in energy retrofits (\$30 million each year on average).
	• Greenhouse gas emissions from Government of Yukon buildings (30 per cent reduction by 2030, compared to 2010).
	• Number of energy efficiency retrofits to residential, commercial and institutional buildings (2,000 by 2030).
	• Average percentage of new homes with energy performance above code.
	• Number of fossil fuel heating systems converted to smart electric heating systems (1,300 by 2030).
	• Number of commercial and institutional biomass energy systems (20 by 2030).
	• Gigawatt hours (GWh) of electricity demand avoided through demand-side management.
Energy production	• Greenhouse gas emissions from electricity generation.
	• Gigawatt hours (GWh) of energy generated from renewable sources.
	• Installed renewable electricity capacity in megawatts (MW).
	• Proportion of off-grid communities with operating renewable electricity projects (all off-grid communities by 2030).
	• Number of large-scale renewable heating projects.
Communities	• Proportion of at-risk communities that geohazard mapping has been completed for (all at-risk communities by 2024).
	• Proportion of at-risk communities that flood maps have been completed for (all at-risk communities by 2030).
	• Proportion of communities that Wildfire Protection Plans have been completed for (all communities by 2021).
People and the environment	• Number of cases of climate-related illnesses.
	• Proportion of Yukon communities with air quality monitoring (all communities by 2023).
	• Percentage of Yukoners that are food insecure.
Innovation	• Number of Yukoners that have participated in green economy professional development opportunities.
	• Proportion of quartz mines covered by new greenhouse gas reporting and climate resilience requirements.
	• The results of Yukon's sustainable tourism measurement framework.
	• Per capita waste generation in Yukon (10 per cent reduction by 2030, compared to 2020).
	• Per capita waste diversion in Yukon (40 per cent by 2030).
Leadership	• Number of Government of Yukon staff that have completed climate change training.

Prioritization

The objectives and actions in *Our Clean Future* went through a detailed prioritization process to make sure we are investing time and resources in the best ways to reduce greenhouse gas emissions, enhance energy security, adapt to the impacts of climate change and build Yukon’s green economy.

Objectives

In fall 2018, the Government of Yukon worked with Indigenous and municipal partners to gather ideas about what a new climate change, energy and green economy strategy for the territory could include. Through public meetings, youth events, and input from stakeholders, experts and industry groups, numerous ideas were brought forward.

To decide which of these areas we should focus our efforts on, the Government of Yukon worked with Indigenous and municipal partners to jointly establish a set of decision-making criteria. The criteria were applied to each of the potential areas for action to inform which areas we should focus on. We used multiple criteria because deciding what to focus on is complex and cannot be determined by looking at any one factor alone.

Decision-making criteria

Effectiveness How much could taking action in this area reduce greenhouse gas emissions, enhance energy security, increase climate resilience or build a green economy?	Economic effects Could taking action in this area positively or negatively affect the economy?
Feasibility How feasible it is to take action in this area over the next 10 years?	Societal effects Could taking action in this area positively or negatively affect social equity and community wellbeing?
Participant interest To what degree were participants in the public engagement interested in seeing action taken in this area?	Public health effects Could taking action in this area positively or negatively affect public health?
Cost effectiveness How cost effective would it be to take action in this area?	Environmental effects Could taking action in this area positively or negatively affect the environment?

To assess each potential area of action using the criteria above, the Government of Yukon drew on several sources of expertise, including:

- “Yukon Greenhouse Gas Mitigation Analysis” by Vector Research that compiled climate change and energy programs and policies from other jurisdictions that may be appropriate to Yukon;
- “Yukon Greenhouse Gas Mitigation Analysis: Part II: Prioritization of Practical Greenhouse Gas Emissions Mitigation Measures” by Vector Research that estimated the cost per tonne and greenhouse gas reduction potential of various measures to reduce emissions;
- “Evaluation of Opportunities in a Green Economy in Yukon” by Research Northwest that identified the core components of Yukon’s green economy and potential green economic opportunities;
- Early findings from the Government of Yukon’s corporate climate change risk assessment regarding key climate hazards and areas of vulnerability that may be applicable to Yukon as a whole; and
- The Government of Yukon’s Women’s Directorate regarding potential societal effects.

Copies of the reports listed above can be found on Yukon.ca.

After applying the criteria to each potential area that we could focus on, the Government of Yukon brought a proposed list of focus areas to Indigenous and municipal partners for discussion. The final focus areas from that discussion became the objectives in *Our Clean Future*.

Actions

The Government of Yukon’s actions in *Our Clean Future* were developed to work toward the objectives identified with Indigenous and municipal partners. The Government of Yukon’s actions were informed by several factors, including:

- Policies and programs implemented in other jurisdictions, and the lessons they learned in the process;
- Lessons learned from previous and current climate change and energy initiatives in Yukon;
- Climate change and energy research and studies from Yukon and across Canada;
- Ideas and suggestions from experts, stakeholders, and industry members;
- Public interest in certain actions as communicated through the first and second public engagements on *Our Clean Future*; and
- Energy-economy modelling completed by Navius Research.

Energy-economy modelling

The Government of Yukon worked with Navius Research to develop an energy-economy model for Yukon that can assess the possible greenhouse gas reduction and economic impacts of different actions to reduce emissions. The model can also identify ways to reduce greenhouse gas emissions most cost effectively.

The first step of model development was to calibrate the model based on Yukon’s historical greenhouse gas emissions and various other pieces of information like energy use, the types of heating systems used in buildings, and economic activities.

The next step was to incorporate the greenhouse gas reduction policies and programs that were already in place in Yukon prior to *Our Clean Future* into the model, such as energy efficiency rebates offered by the Government of Yukon’s Energy Branch. This resulted in a forecast of what Yukon’s greenhouse gas emissions might look like if we continued with current initiatives only – referred to as the “reference case” or “business as usual” scenario.

The final step of the modelling was to incorporate potential new policies and programs into the model. The resulting greenhouse gas reduction and economic impacts forecasted by the model were then used to tweak and finalize new policies and programs, and to estimate the total greenhouse gas reduction that we will achieve through the actions in *Our Clean Future*.

The energy-economy model will continue to be updated as we implement *Our Clean Future* to inform adjustments to the strategy to meet the 2030 greenhouse gas reduction target for Yukon.

For more information about the energy-economy modelling, please see the detailed report from Navius Research available through Yukon.ca.

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Kusawa Lake.

