



# Our Clean Future

2020 annual report

August 2021

**Yukon**

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**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.**

## **Introduction**

*Our Clean Future* was released in September 2020 after three years of collaboration with Yukon First Nations, transboundary Indigenous groups and Yukon municipalities. It sets out shared objectives with Indigenous and municipal partners across the territory along with the steps the Government of Yukon will take to address the climate emergency and build a bright future for Yukoners.

## Our Clean Future sets four goals that will help us achieve our vision for a clean future.



Reduce Yukon's greenhouse gas emissions.



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



Adapt to the impacts of climate change.



Build a green economy.

## To reach these goals, *Our Clean Future* identifies 131 actions across seven areas.



Transportation



Communities



Homes and buildings



Innovation



Energy production



Leadership



People and the environment

**Each year, the Government of Yukon will report on the implementation of *Our Clean Future* as part of our commitment to transparency and accountability to Yukoners. This report is the first of these annual reports covering the 2020 calendar year.**

### **The report is presented in four parts:**

- Part A describes overall progress toward the key goals and targets in *Our Clean Future*. This is where you will find information about Yukon's greenhouse gas emissions, renewable electricity generation and climate resilience. The data presented in this section are from 2019 or 2020, depending on the indicator.
- Part B describes progress toward the specific objectives and actions in *Our Clean Future*. In this section, you will find information on key progress indicators and other achievements from the 2020 calendar year.
- Appendix A lists the status of all of the Government of Yukon's actions in *Our Clean Future* – specifically, whether each action has been completed, is in progress or has not been started yet – as of the time this report was prepared in spring 2021.
- Appendix B provides an update on the actions that Indigenous and municipal partners have included in *Our Clean Future*.

The purpose of this annual report is to clearly communicate what we have achieved. It also identifies areas where we may need to adapt our efforts to successfully reach our 2030 goals. Given that *Our Clean Future* was released in September 2020, this report is a partial progress report and it sets the stage for future reporting.

In future years, comprehensive information on the implementation of *Our Clean Future* will be available through a website that will complement the information in the written annual reports.

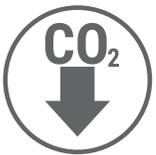
### **Updates to *Our Clean Future***

In recognition of the urgency of the climate crisis, the Government of Yukon has increased the greenhouse gas reduction target in *Our Clean Future* from 30 per cent to 45 per cent by 2030, compared to 2010 levels. We are establishing a Yukon Climate Leadership Council that will include representatives from environmental organizations, the renewable energy sector, industry, Yukon First Nations, labour, municipal governments, youth and Yukon University to develop the plan to reach this increased target.

Over the next several months, the Government of Yukon will support the Yukon Climate Leadership Council in their work. This may result in changes or additions to the actions in *Our Clean Future*, as well as adjustments to other targets in the strategy, such as the current targets for renewable electricity generation, renewable heating, zero emission vehicles, renewable fuels and building retrofits. In the meantime, the Government of Yukon will continue to implement the current actions in *Our Clean Future* designed to put Yukon on track to achieve a 30 per cent reduction in emissions. These actions will continue to be key to reaching the new 45 per cent target.

## Part A: Goals

This part of the report describes overall progress toward the key goals and targets in *Our Clean Future*. The data presented here are from 2019 or 2020, depending on the indicator, as some data sources take longer to compile and analyze than others. Given that *Our Clean Future* was released in late 2020, the data below do not yet reflect the impact of actions in *Our Clean Future* but set the stage for future reporting.



# Reducing greenhouse gas emissions

## Overview

Our *Clean Future* set three targets to reduce Yukon's greenhouse gas emissions.

- 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 45 per cent lower than they were in 2010. This target has been increased from the 30 per cent target that was established when *Our Clean Future* was released in recognition of how important it is to achieve a significant reduction in greenhouse gas emissions in the near term.
- 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.
- Reaching these targets by 2030 will put Yukon on the path to net-zero greenhouse gas emissions by 2050 for our entire economy.

The sections below summarize our progress toward each target. For more information on how Yukon's greenhouse gas emissions are calculated and the various factors that influence our emissions, such as population and economic growth, refer to the detailed backgrounder report.

## 45 per cent emissions reduction by 2030

In 2010, Yukon's greenhouse gas emissions, excluding emissions from mining, were 611 kilotonnes. By 2030, these emissions need to be 336 kilotonnes or less to reach our new target to reduce emissions by 45 per cent.

Yukon's non-mining greenhouse gas emissions in 2018 and 2019, which are the most recent years we have data for, were 699 and 721 kilotonnes, respectively. This means that 2019 emissions were 18 per cent higher than 2010 levels. As you can see in Figure 1 below, this is consistent with the original model forecast for *Our Clean Future*, which anticipated that Yukon's greenhouse gas emissions would rise until 2020 before starting to decrease in 2021 as a result of the actions in *Our Clean Future*. However, the actual increase in Yukon's emissions in 2018 and 2019 was higher than initially anticipated as seen by the fact that the blue bars are higher than the dotted yellow line. This will be incorporated into our next round of modelling work.

Because of the significant time lag with greenhouse gas emissions data, we are also tracking our progress related to building retrofits, zero emission vehicles and other areas that we know are key to reducing greenhouse gas emissions. That information can be found in Part B of this report.

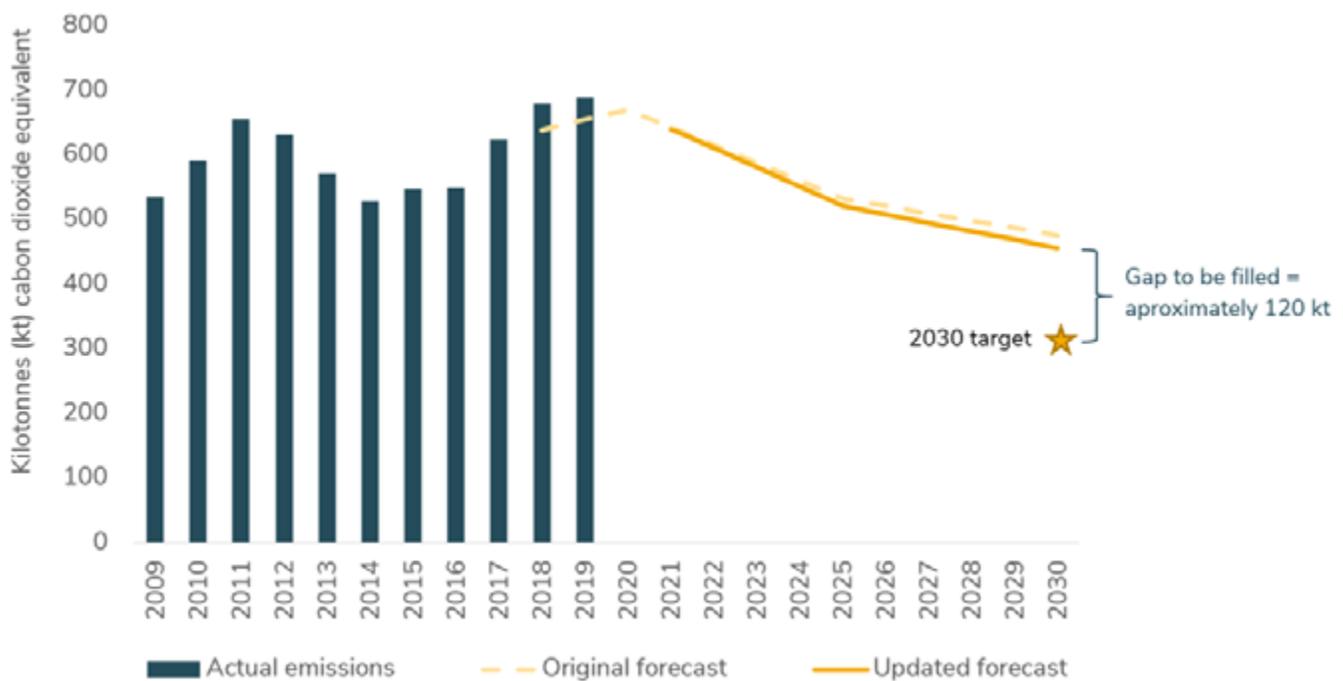


Figure 1. Actual and forecasted greenhouse gas emissions, excluding emissions from mining.

Looking out to 2030, modelling completed prior to *Our Clean Future* suggested that Yukon's greenhouse gas emissions, excluding mining emissions, could increase to 678 kilotonnes in 2030 if additional action was not taken. As a result, we estimate that we need to reduce our 2030 emissions by 342 kilotonnes to reach the new 2030 target. This number is an estimate and may change when we update the model to reflect Yukon's actual 2018 and 2019 emissions.

The latest modeling work completed in June 2021 suggests that the actions in *Our Clean Future*, along with federal policies and programs, are expected to reduce our 2030 greenhouse gas emissions by 221 kilotonnes. The updated model forecast anticipates greater greenhouse gas reductions than the



original forecast completed for *Our Clean Future*, which only expected the current actions in the strategy to reduce our greenhouse gas emissions by 201 kilotonnes. The increase is due to the Government of Canada's recent announcement to continue increasing the federal carbon price out to 2030.

When *Our Clean Future* was released, the strategy was estimated to get Yukon three-quarters of the way to the 2030 target of a 30 per cent reduction in greenhouse gas emissions. However, with the new target of 45 per cent by 2030, the gap to reaching Yukon's 2030 target has increased. Specifically, anticipated greenhouse gas reductions from the current actions in *Our Clean Future* are estimated to get us roughly two-thirds of the way to the new 45 per cent target, as seen in Figure 1 above. Over the next several months, the Government of Yukon will support the Yukon Climate Leadership Council to identify additional actions to reach the new target.

## **Yukon Climate Leadership Council**

The Yukon Climate Leadership Council will play a key role in developing plans to reach 45 per cent reduction target. The Council will include representatives from environmental organizations, the renewable energy sector, industry, Yukon First Nations, labour, municipal governments, youth and the Yukon University to ensure a diverse range of perspectives and expertise are considered.

## **Emissions intensity of mining**

A target for the greenhouse gas emissions intensity – or emissions per unit of production – of Yukon's mining industry will be set by the end of 2022. To date, the Government of Yukon has hired a consulting firm to help identify target options and actions needed to reach those targets. The results will be discussed with Yukon's mining industry and other key stakeholders later in 2021.

Once the target(s) are set, each *Our Clean Future* annual report will share information on the actual emissions intensity of Yukon's mining industry compared to the target.

## **Net-zero by 2050**

Achieving our 2030 targets for mining and non-mining emissions will put Yukon on the path to reaching net-zero emissions for our entire economy by 2050. In 2019, Yukon's total greenhouse gas emissions across the entire economy were 783 kilotonnes, as shown in Figure 2. This is a 14 per cent increase from 2010 emissions of 684 kilotonnes. Over the next few years, the Government of Yukon will work with experts and stakeholders to more clearly define the level of greenhouse gas reductions, combined with steps to remove carbon dioxide from the atmosphere, that are needed to reach the territory's 2050 net-zero target.

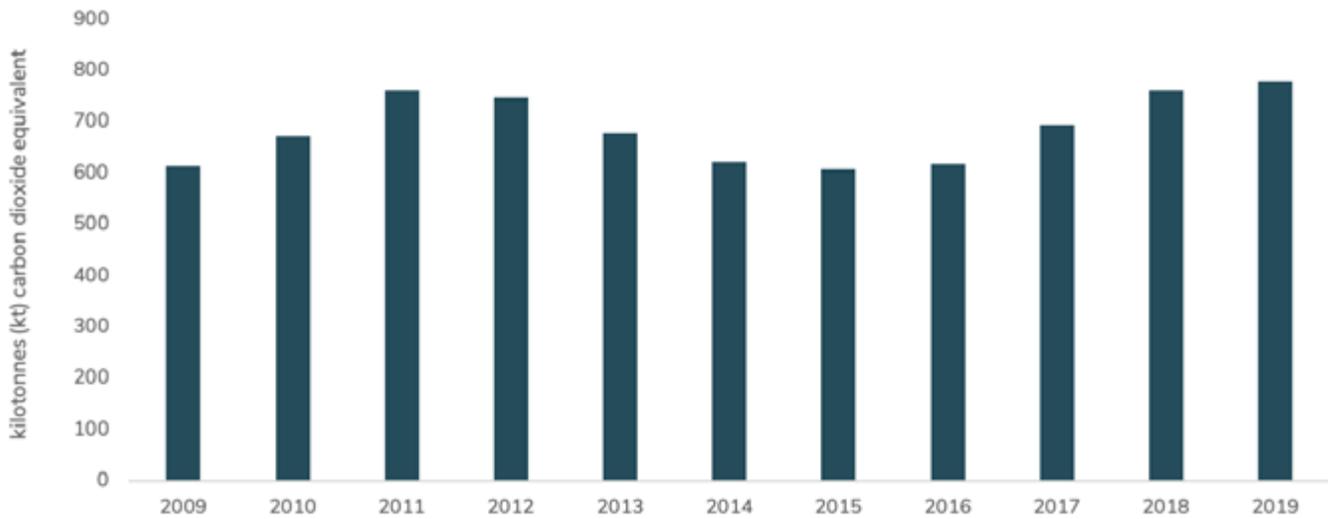


Figure 2. Yukon's total greenhouse gas emissions from 2010 to 2019.

### Net-zero by 2050

Net-zero means that any remaining greenhouse gas emissions in 2050 are balanced by the removal of carbon dioxide from the atmosphere. The net-zero approach recognizes that there are parts of the economy where it may be very challenging to completely eliminate greenhouse gas emissions by 2050. Instead, those activities can continue to release small amounts of greenhouse gases, as long as an equivalent amount of carbon is removed from the atmosphere. There are many ways that carbon can be removed, ranging from simple things like planting trees to complex technologies like direct air capture. Over the next few years, the Government of Yukon will work with experts and stakeholders to figure out what pathways to net-zero might make most sense for Yukon.



# Ensuring reliable, affordable and renewable energy

## Overview

Continuing to generate most of the territory's electricity from renewable sources and increasing the proportion of renewable heating are key to reducing Yukon's greenhouse gas emissions while ensuring Yukoners have access to reliable and affordable energy. *Our Clean Future* sets three targets related to renewable energy:

- 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.
- 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.
- By 2030, we will meet 50 per cent of our heating needs with renewable energy sources.

This report shares information on our progress toward each target. Over the next few months, the Government of Yukon will work with the Yukon Climate Leadership Council to assess whether any of these targets need to be increased in order to achieve the target to reduce greenhouse gas emissions from key sectors by 45 per cent by 2030.

## 97 per cent renewable electricity by 2030

Historically, we have met over 90 per cent of our electricity needs each year with clean, renewable power thanks to our large supply of hydroelectricity. To reach our target of 97 per cent renewable electricity on-grid by 2030, we expect a minimum of 93 per cent of on-grid electricity to be generated from renewables each year on average, gradually increasing out to 2030.

In 2020, 94.9 per cent of the electricity on Yukon’s main grid was generated from renewable sources, calculated as an average over the previous 25 years. This is shown by the dark blue line in Figure 3 below and is a slight increase over the rolling average from 2017 to 2019. In future annual reports, we will look to see this number increasing on the path toward 97 per cent renewable by 2030.

Figure 3 also shows the percentage of renewable electricity generation in each year from 2010 to 2020 (dotted yellow line). In 2020, 86.2 per cent of electricity on Yukon’s main grid was generated from renewable sources. There is a lot of variability in each year’s renewable electricity generation because of changes in the amount of water in the reservoirs that we use to generate hydroelectricity. The water available depends on the amount of snow, rain, and glacial melt each year. This is why we are using a 25-year rolling average to track progress increasing renewable electricity generation on Yukon’s main grid. The rolling average looks at renewable electricity generation over a longer period of time, smoothing out year-to-year variations and giving a better indication of our overall progress.

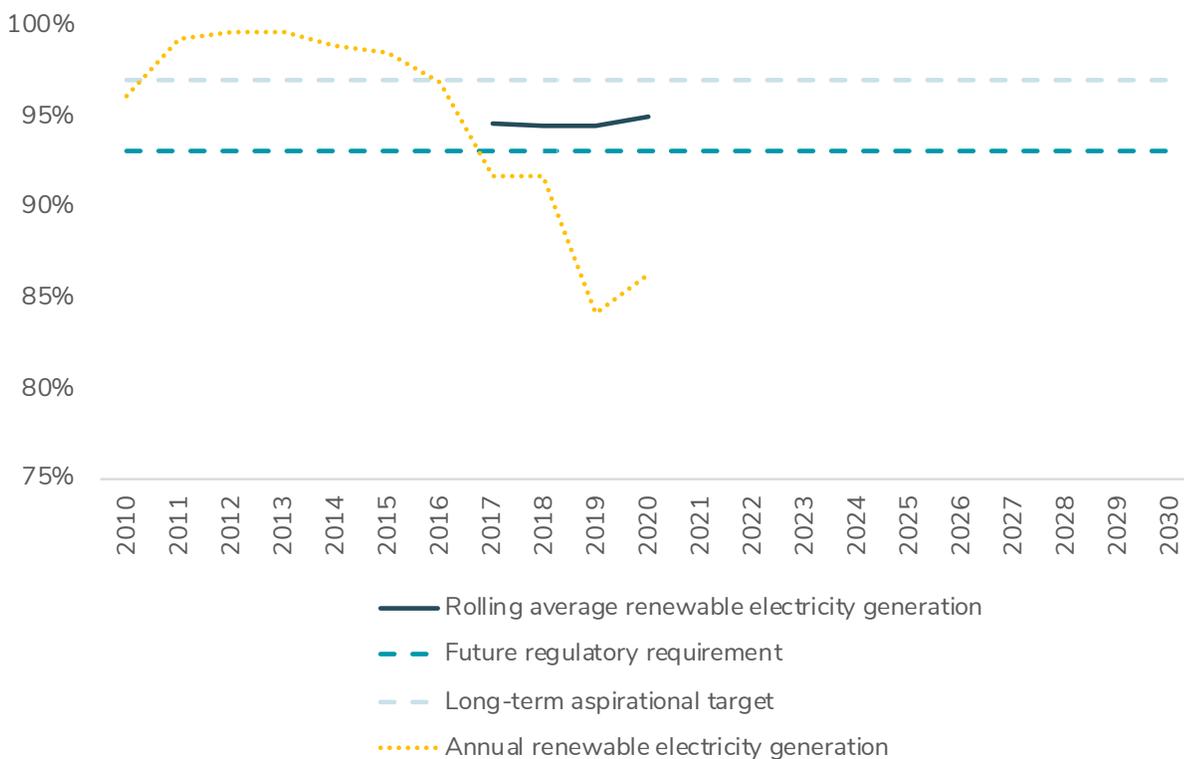


Figure 3. Percentage of renewable electricity generation on Yukon’s main electricity grid, calculated as a rolling average over the previous 25-year period.

## 30 per cent less diesel for off-grid electricity generation by 2030

In 2020, 5.6 million litres of diesel were burned to generate electricity in Yukon’s four off-grid communities: Beaver Creek, Burwash Landing/Destruction Bay, Watson Lake and Old Crow, shown in Figure 4. This is eight per cent higher than 2010 when 5.2 million litres of diesel were burned to generate electricity in these communities.

To reach the 2030 target of a 30 per cent reduction compared to 2010 levels, we need to reduce the amount of diesel used to 3.6 million litres or less. We will accomplish this through community-based renewable electricity projects and energy efficiency measures, such as the Old Crow Solar Project that began generating renewable electricity earlier this year.

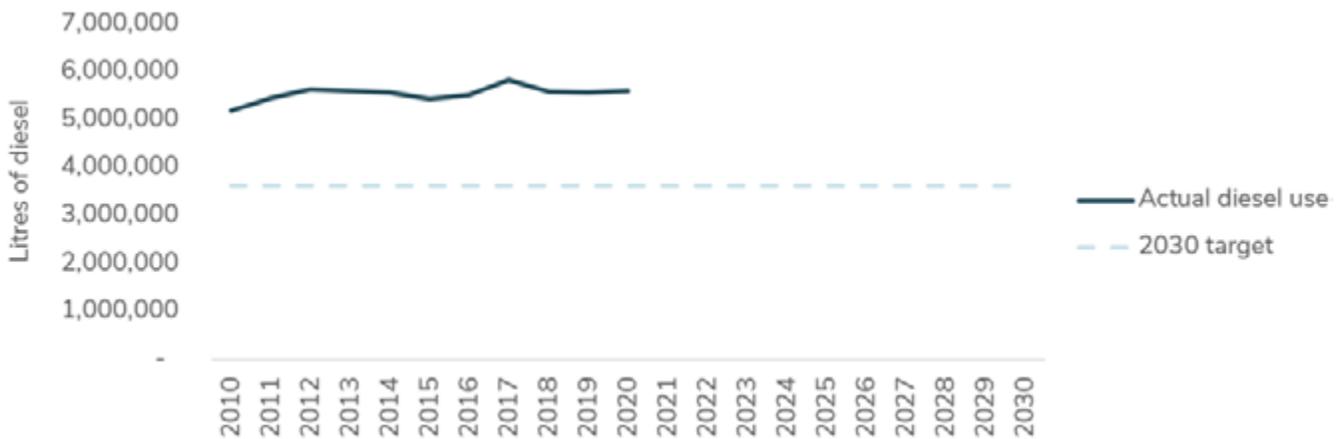


Figure 4. Litres of diesel used to generate electricity in Yukon’s off-grid communities.

## 50 per cent renewable heating by 2030

In 2009, we estimated that 26 per cent of Yukon’s heating needs were met from renewable sources such as clean electricity and biomass (wood) energy. Through *Our Clean Future*, we will increase that amount to 50 per cent by 2030.

While we have an estimate from 2009, we are working on a methodology to more accurately track the amount of heat energy that comes from different sources in Yukon. There are areas such as the amount of wood used to heat homes where our earlier estimates were likely inaccurate because this information is hard to gather consistently. In future annual reports, we will report the percentage of renewable heating relative to the 50 per cent target using the improved methodology.



## Adapting to climate change

### Overview

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. It also means taking advantage of new opportunities that may arise. A key part of adaptation is to ensure that we are resilient to the changes that are happening. This means we are able to withstand and recover from challenges quickly and continue to flourish as people and communities. *Our Clean Future* sets a target that Yukon will be highly resilient to the impacts of climate change by 2030.

### Highly resilient by 2030

To measure and report on resilience, we are working to identify indicators that will help show how our overall resilience as a territory is changing. In future annual reports, we will use these indicators to report on Yukon's climate resilience and our progress toward the target of highly resilient by 2030.

More information about this work will be available through the report on the Yukon-wide Climate Risk Assessment, expected to be released in 2021.



## Building a green economy

### Overview

A green economy creates economic prosperity while protecting and restoring the natural environment to support a healthy, prosperous future for generations to come. We are tracking our progress toward building a green economy by looking at changes to two key indicators:

- Greenhouse gas emissions per person.
- Greenhouse gas emissions per unit of real gross domestic product, referred to as the emissions intensity of the economy.

These indicators tell us whether Yukon's economy is becoming more efficient in terms of the greenhouse gas emissions generated relative to the number of people living in the territory and the size of our economy.

## Greenhouse gas emissions per person

In 2010, each Yukoner produced 19.6 tonnes of carbon dioxide equivalent on average, based on Yukon’s total greenhouse gas emissions and the number of people living in the territory, as shown in Figure 5 below. In 2019, our greenhouse gas emissions per person were slightly lower at 18.9 tonnes of carbon dioxide equivalent. Over the next 10 years, we will look for a continued decrease in this number.

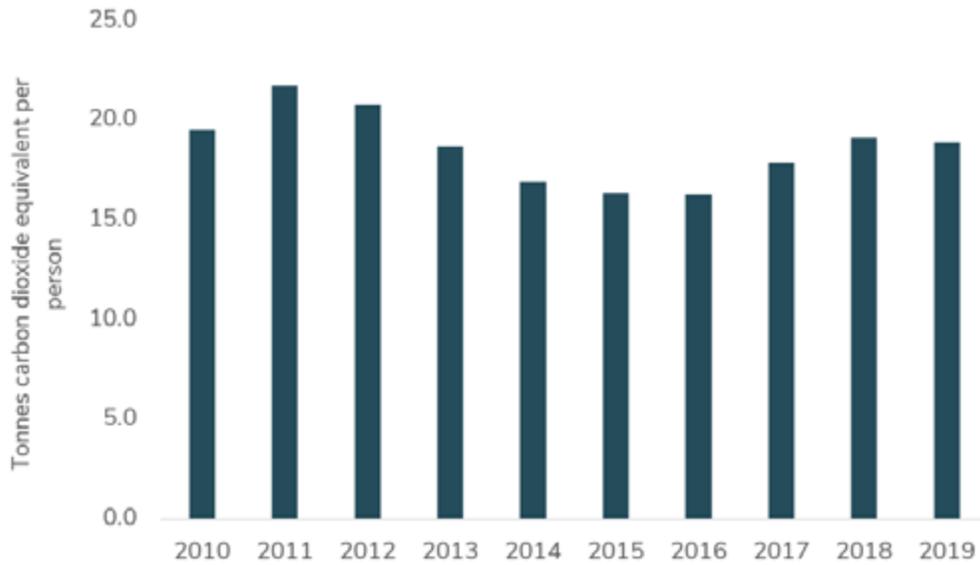


Figure 5. Average greenhouse gas emissions per person from 2010 to 2019.

## Emissions intensity of the economy

In 2010, Yukon’s economy generated 304 tonnes of carbon dioxide equivalent per unit of real gross domestic product (GDP), as shown in Figure 6 below. In 2019, that number had decreased slightly to 295 tonnes of carbon dioxide equivalent. As with greenhouse gas emissions per person, we will look for a continued decrease in the emissions intensity of economic activity over the next 10 years.

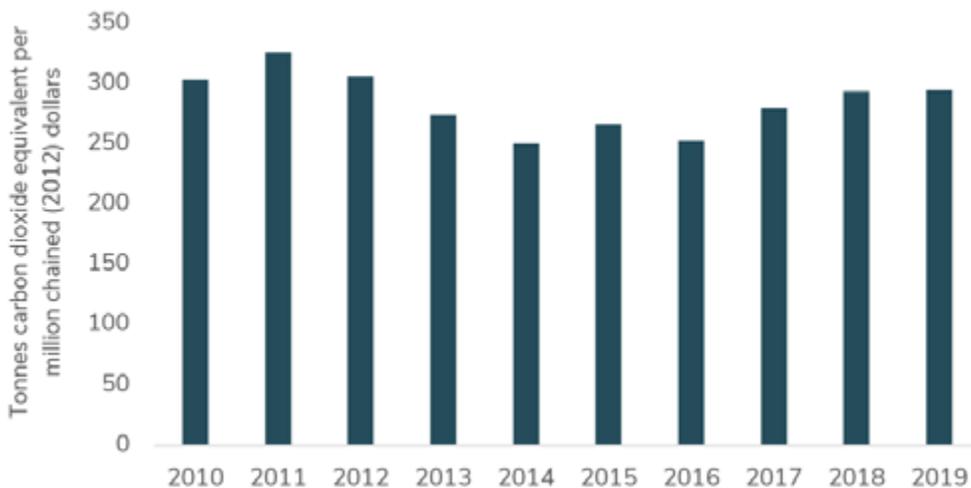


Figure 6. The emissions intensity of Yukon’s economy from 2010 to 2019.



## **Part B: Objectives and actions**

This part of the report describes progress toward the specific objectives and actions in *Our Clean Future*. In this section, you will find information on which actions have been completed and data on key progress indicators.

## Overview

To achieve the goals of *Our Clean Future*, the Government of Yukon set out 131 specific, tangible actions. Each action contributes to reaching one of the objectives in *Our Clean Future*, which are organized into seven areas.



Transportation



Communities



Homes and buildings



Innovation



Energy production



Leadership



People and the environment

Each area is colour-coded for easy identification.

Each action is titled by the first letter of the area it relates to, and then assigned a number, i.e. action T3 will stand for action number three found under the area of Transportation.

In addition, the Government of Yukon department or agency responsible for leading the implementation of each action is listed beside each action for transparency and accountability.

### Government of Yukon departments and agencies

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

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

## Action statuses

Of the 131 actions in *Our Clean Future*, 104 are new commitments with deadlines. The remaining 27 are commitments to continue with existing successful initiatives.

For the purposes of annual reporting, all *Our Clean Future* actions with deadlines are assigned one of the following three statuses:

- Complete – The action has been completed.
- In progress – Work on the action is underway.
- Not started – Work on the action has not started yet.

Eleven of the actions in *Our Clean Future* had a 2020 deadline. At the time of preparing this report in spring 2021, nine of these actions have been completed and two are in progress.

### 2020 actions: Complete

#	Action details	Department
T3	Provide a rebate to Yukon businesses and individuals who purchase eligible zero emission vehicles beginning in 2020.	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
T11	Provide rebates to encourage the purchase of electric bicycles for personal and business commuting beginning in 2020.	EMR
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
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
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
C10	Increase the capacity in Yukon Wildland Fire to prevent wildfires and respond to extended fire seasons by investing in staffing in 2020.	CS
C14	Incorporate support, where possible, for local food producers into Government of Yukon procurement processes beginning in 2020.	HPW
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

## 2020 actions: In progress

#	Action details	Department	Status
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	The glacier monitoring program will be developed and implemented by the end of 2021.
I2	Update the Government of Yukon's procurement policies and standards in 2020 to better support sustainable and local procurement.	HPW	A draft Sustainable Procurement Strategy and Implementation Plan has been prepared and will be finalized by the end of 2021.

For the status of all of the actions in *Our Clean Future*, see Appendix A.

# Overall progress

In addition to the status of each action, we are tracking several indicators to help us understand progress on our objectives and the actions that support them. The sections below share key progress indicators and other information for each objective, organized by area, for the 2020 calendar year.

In this section, we have also taken the opportunity to highlight progress on climate change and energy initiatives by Yukon First Nations, transboundary Indigenous groups, and Yukon municipalities that partnered in the development of *Our Clean Future*. A complete list of actions that Indigenous and municipal partners included in *Our Clean Future* is in Appendix B.



## Area #1: Transportation

***Our Clean Future* aims to have 4,800 zero emission vehicles on our roads by 2030 and only 55 per cent of commuting trips in Whitehorse to be made by drivers by 2031. We will increase the use of low-carbon renewable fuels, travel more efficiently and ensure our transportation infrastructure is climate-resilient.**

As committed to in *Our Clean Future*, these efforts will reduce Yukon's road transportation emissions by at least 30 per cent by 2030, compared to 2010 emissions of 377 kilotonnes. As we identify the actions needed to reach Yukon's increased greenhouse gas reduction target of 45 per cent by 2030, we will assess whether the target for road transportation emissions needs to be increased as well.

In 2019, our road transportation emissions were 443 kilotonnes, which is 17 per cent higher than 2010 levels, shown in Figure 7. We expect to see road transportation emissions peak in 2020 and then start to decrease in 2021 as the actions in *Our Clean Future* take effect.



Figure 7. Greenhouse gas emissions from road transportation from 2010 to 2019.

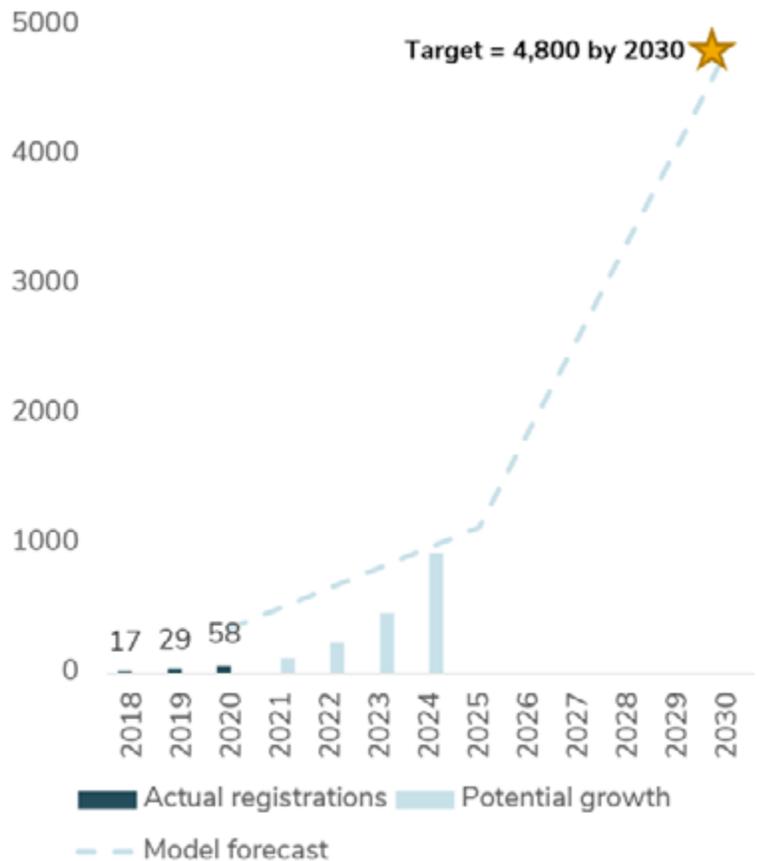


## Zero emission vehicles

At the end of 2020, there were **58** zero emission vehicles registered in Yukon – approximately twice as many as at the end of 2019. While this is slightly behind the forecast from our greenhouse gas reduction model, we expect to catch up in the next few years.

In 2020, *Our Clean Future* helped drive the increase in zero emission vehicles by:

- Launching a new rebate program and issuing **22** rebates for zero emission vehicles (**action T3**).
- Installing **two** fast-charging stations for electric vehicles in Marsh Lake and Haines Junction (**action T4**).



## Government of Yukon Leadership

The Government of Yukon is committed to lead by example when it comes to reducing greenhouse gas emissions from transportation. In 2020, we:

- ▶ Began work on a new **remote work policy** that will enable Government of Yukon employees in suitable positions to work from home for the longer term (**action T18**).
- ▶ Incorporated **fuel efficiency** into purchasing decisions for future fleet vehicle procurements (**action T22**).
- ▶ Trained all heavy duty vehicle operators on **efficient driving techniques** (**action T16**).

The Government of Yukon has also committed that 50 per cent of all new light-duty cars we purchase will be zero emission (**action T2**). While we did not purchase any new light-duty cars in 2020, we issued a tender in February 2021 to purchase **seven zero emission vehicles**, which is expected to meet this commitment for 2021.



# ELECTRIC VEHICLE CONNECTIVITY

AS OF DECEMBER 31, 2020

 Fast-charging Station

**Bold** Community can be reached in EV from Whitehorse



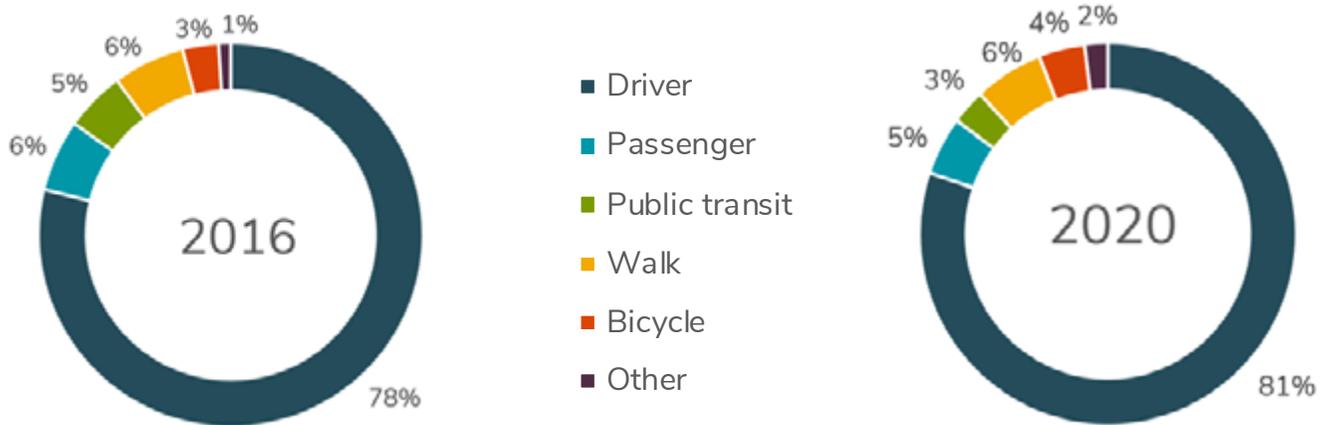
**5** electric vehicle charging stations

**3 out of 13** road-accessible communities can be reached in an electric vehicle





## Public and active transportation



In 2016, 78 per cent of Whitehorse residents commuted to work as a driver. In 2020, this had increased to 81 per cent, demonstrating that work is needed to reach our target of 55 per cent by 2031. In 2020, the Government of Yukon took action to encourage greater use of alternative modes of transportation in the future, including:

- Launching a new rebate program and issuing **124** rebates for electric bicycles (**action T11**).
- Supporting **two** public transportation infrastructure projects in Whitehorse (**action T12**).

Moving forward, the Government of Yukon will continue to work with First Nations and municipal partners on public and active transportation projects.

## Climate resilience

Geohazard maps, flood maps and vulnerability studies help us understand where existing infrastructure may be at risk from climate impacts like permafrost thaw and flooding. We can then put appropriate preventative measures and precautions in place. In 2020, the Government of Yukon:

- Completed preliminary work to identify priority areas for study as part of our commitment to develop a **geohazard mapping program** for major transportation corridors by 2022 (**action T26**).
- Began work to analyze **flood risk** for critical transportation corridors, to be completed by 2023 (**action T27**).



## Area #2: Homes and buildings

Through *Our Clean Future*, 2,000 residential, commercial and institutional buildings will be retrofitted by 2030. These retrofits will reduce energy use and greenhouse gas emissions while saving Yukoners money on utility bills. At the same time, smart electric heating systems will be installed in 1,300 homes that previously relied on fossil fuel heating. Biomass heating systems will be installed in an additional 20 commercial and institutional buildings. Existing and new homes and buildings will be better built to withstand the impacts of our changing climate and Yukoners will use energy more efficiently.

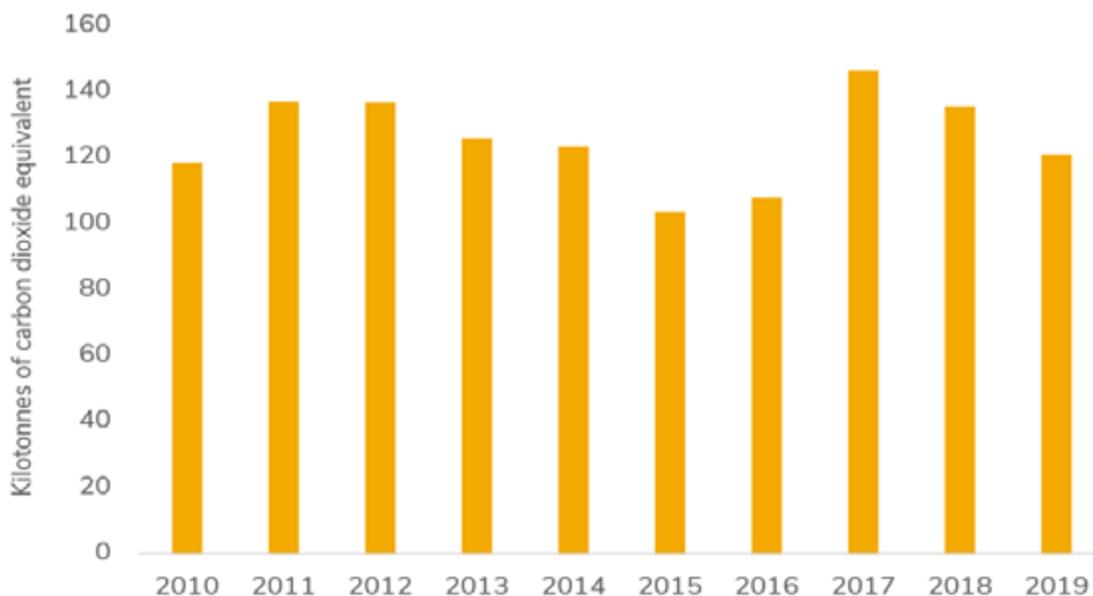


Figure 8. Greenhouse gas emissions from heating fuel from 2010 to 2019.

In 2019, 121 kilotonnes of greenhouse gas emissions were produced from heating homes and buildings across Yukon, shown in Figure 8. This level is comparable to 2010 emissions of 119 kilotonnes. This reflects warmer winter temperatures in 2019 as well as efforts underway prior to *Our Clean Future* to make homes and buildings across Yukon more energy efficient.

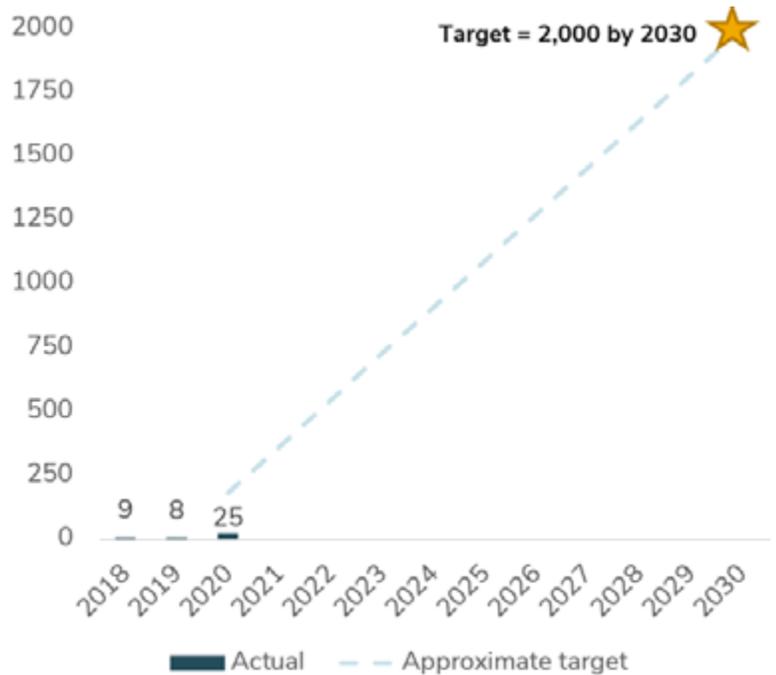
Moving forward, the Government of Yukon will continue to invest in energy retrofits for residential, commercial and institutional buildings. This investment will lead to a decrease in greenhouse gas emissions from heating in future annual reports.



## Building retrofits

In 2020, the Government of Yukon supported **25** high performance energy retrofits to homes and buildings, excluding Government of Yukon buildings. While this number is more than twice as high as previous years, progress in this area must be further accelerated to reach 2,000 retrofits by 2030.

Plans to reach this target include offering low-interest loans for building retrofits (**action H3**) and continued capacity development with local industry (**action I4**).



## High performance energy retrofits

For the purposes of tracking progress toward our target of 2,000 retrofits by 2030, we are only counting “high performance energy retrofits” that significantly reduce energy use and greenhouse gas emissions from homes and buildings. In homes, high performance retrofits result in a reduction in energy use of 20 per cent or greater. In commercial buildings, high performance retrofits must include improvements to the building’s insulation rather than just upgrades to windows and lighting.



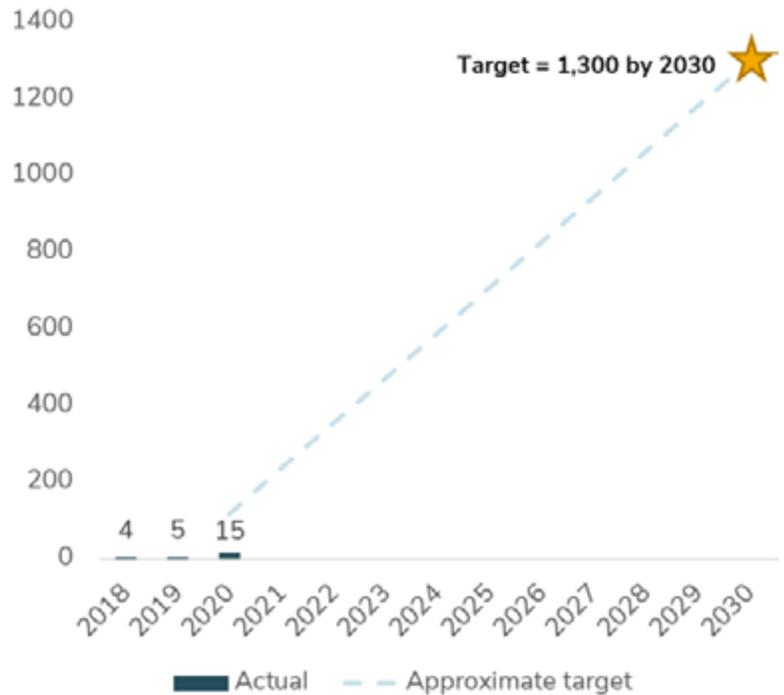
## Smart electric heating

In 2020, the Government of Yukon supported the installation of **12** smart electric heating systems like air-source heat pumps in Yukon homes. We:

- Increased the **rebate for smart electric heating** systems (**action H21**).
- Launched a **partnership with local industry** to test the use of electric heat pumps with backup fossil fuel heating systems (**action H22**).

The Yukon Conservation Society also launched an electric thermal storage demonstration project that installed **three** smart electric heating systems in 2020.

These initiatives, combined with the Government of Yukon’s future low-interest financing program for energy retrofits, are expected to accelerate our progress toward our target of 1,300 smart electric heating systems by 2030.



## Electric thermal storage demonstration project

This project, led by the Yukon Conservation Society, aims to study the benefits and challenges of widespread adoption of electric thermal storage (ETS) in Yukon. ETS has been proven elsewhere to help reduce peak electricity demand and safely add more renewable electricity to the grid. Furthermore, pairing ETS with cold-climate air-source heat pumps – a combination offered through the ETS project thanks to support from the Government of Yukon’s Energy Branch – provides participants with reliable and affordable heat from renewable energy. Three systems were installed in 2020 with 42 more planned for 2021.

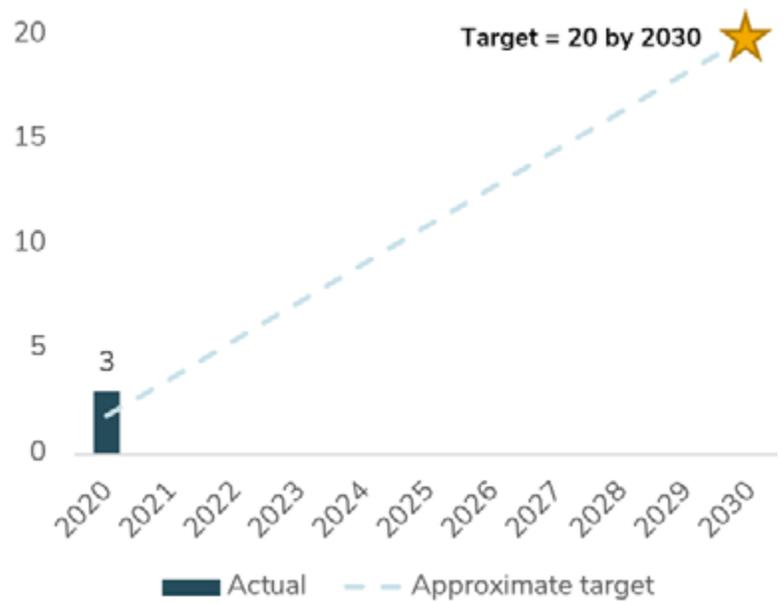


## Biomass heating

In 2020, **three** new biomass heating systems were installed and operating in commercial or institutional buildings, excluding Government of Yukon buildings. This means we are on track to reach our target of 20 new large biomass systems between 2020 and 2030.

To support this progress, in 2020, we:

- Worked with **four** Yukon First Nations on five biomass feasibility studies (**action H20**).
- Initiated a contract to **analyze and compare the climate benefits** of different types of biomass harvesting and use. This work will identify recommended forest management practices and guide sustainable and low-carbon biomass use (**action H25**).



## Government of Yukon leadership

Under *Our Clean Future*, the Government of Yukon will reduce greenhouse gas emissions from our buildings by 30 per cent by 2030, compared to 2010. This will be done through energy efficiency improvements and the installation of renewable heating systems. In 2020, we:

- ▶ Retrofitted **23** Government of Yukon buildings (**action H1**).
- ▶ Initiated energy assessments for **52** additional buildings (**action H2**). These assessments will inform additional energy retrofits.
- ▶ Initiated **two** biomass heating installations in Government of Yukon buildings (**action H17**).

In 2019, greenhouse gas emissions from Government of Yukon buildings were 24 kilotonnes. This is an 11 per cent increase from 2010 levels of 22 kilotonnes. We expect to see to see greenhouse gas emissions from Government of Yukon buildings decrease in future years as we implement the commitments in *Our Clean Future*.

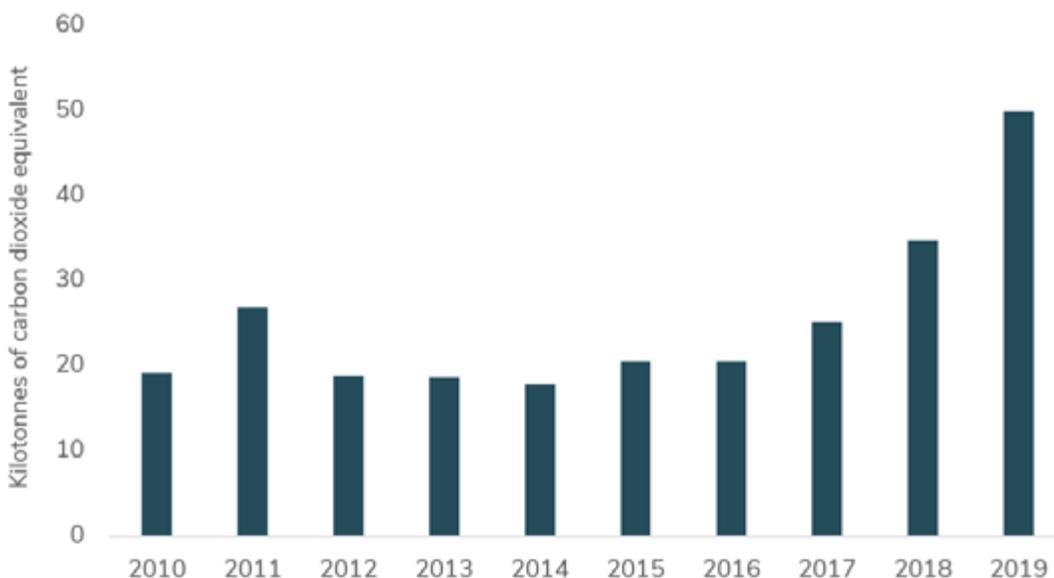




## Area #3: Energy production

**Under *Our Clean Future*, we will increase the amount of renewable energy produced for electricity and heating. These efforts, combined with electricity grid investments, will ensure our electricity infrastructure is climate-resilient and suited to new patterns of electricity generation and use. By 2030, we will see an increase in local and community-based renewable electricity generation, including operating independent power production projects in all of Yukon's off-grid communities.**

In 2019, greenhouse gas emissions from electricity generation were 50 kilotonnes, shown in Figure 9. This is more than two times higher than 2010 emissions of 19 kilotonnes and reflects low water levels in the reservoirs that feed Yukon's main hydroelectric grid. Through *Our Clean Future* and the Yukon Energy Corporation's 10-year renewable electricity plan, new renewable electricity projects will bring Yukon's greenhouse gas emissions from electricity generation back down even as electricity demand continues to grow.



*Figure 9. Greenhouse gas emissions from electricity generation from 2010 to 2019.*



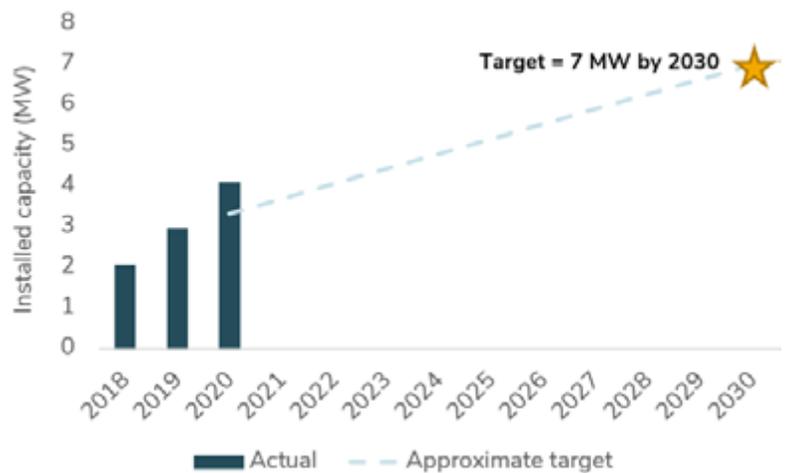
## Renewable energy production

In 2020, the Government of Yukon worked collaboratively with partners to increase the amount of renewable energy generated and produced in the territory. We:

- Provided financial support for **eight** renewable energy projects through the Innovative Renewable Energy Initiative and the Arctic Energy Fund (**action E6**).
- Signed **three Energy Purchase Agreements** under the Independent Power Production Policy, one of which is for the solar project **owned by the Vuntut Gwitchin First Nation** (**action E7**).
- Began work on new clean energy legislation that will include our commitment to a minimum of **93 per cent renewable electricity generation** on Yukon’s main grid on average each year (**action E1**).
- Secured federal funding for exploratory drilling to investigate the potential for **geothermal energy production** in Yukon (**action E12**).

One of the ways we are supporting renewable electricity generation in Yukon is through the Micro-generation Program (action E10). This program enables households to generate clean electricity and sell power to the grid.

At the end of 2020, 4.1 Megawatts (MW) of renewable capacity were installed through the program, putting us ahead of schedule for our 2030 target of 7 MW.



In 2020, the Vuntut Gwitchin Government established an Energy Task Force to guide the development of a Community Energy and Implementation Plan to reduce greenhouse gas emissions in Old Crow.

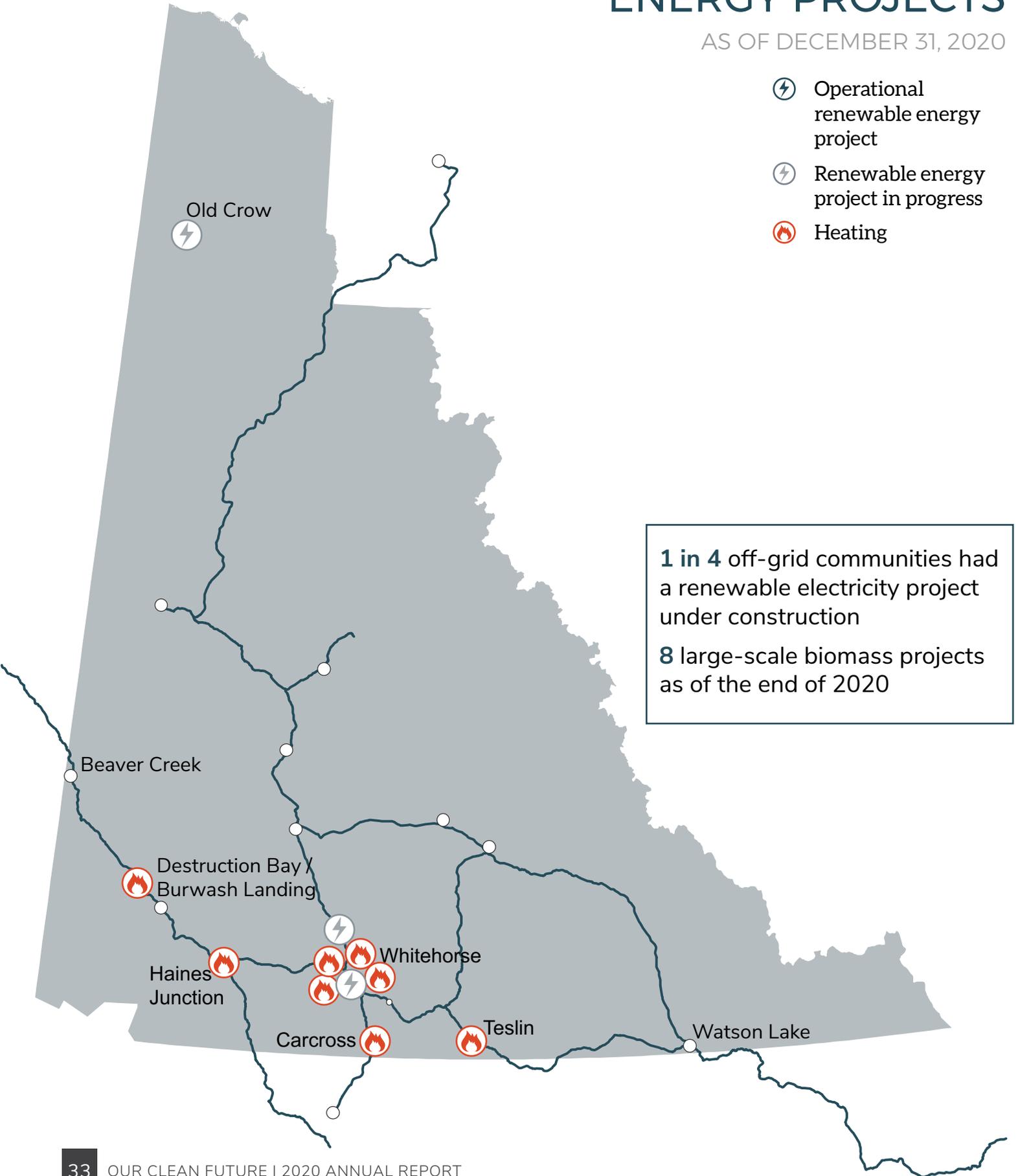




# LARGE RENEWABLE ENERGY PROJECTS

AS OF DECEMBER 31, 2020

-  Operational renewable energy project
-  Renewable energy project in progress
-  Heating



**1 in 4** off-grid communities had a renewable electricity project under construction

**8** large-scale biomass projects as of the end of 2020



## Resilient electricity infrastructure

In 2020, the Yukon Energy Corporation:

- Conducted simulations to estimate the **impacts of climate change on the water reservoirs** that feed Yukon Energy's hydro facilities, including the impacts of climate change on the glaciers that affect those reservoirs. The data from the simulations were incorporated into the model that Yukon Energy uses to inform hydroelectricity generation forecasts (**action E13**).
- Worked on a **Climate Change Adaptation Plan** that is now being implemented by identifying risks and figuring out how risk reduction measures will be incorporated into the utility's practices and processes (**action E14**).

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The Energy and Sustainability Analyst at the Council of Yukon First Nations has been in place since September 2020. The position started an Energy Networking Group to bring together Yukon First Nations to share information about energy issues and priorities.

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## Area #4: People and the environment

Under *Our Clean Future*, we are taking action to 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, and protect and enhance human health and wellbeing as the climate changes. Efforts in these three areas are often interrelated given the intimate connection between Yukoners and our environment.

### Wild species and their habitats

In 2020, we improved our understanding of how climate change is affecting wild species and their habitats by:

- Measuring the **baseline conditions of some of Yukon's wetlands** to better understand future changes (**action P1**).
- Conducting **scientific research on the impacts of climate change on species and their habitats** like how changes in snow depth, rainfall and fire conditions affect Boreal Caribou, Snowshoe Hare, Little Brown Bats, Lake Trout and alpine tundra ecosystems (**action P3**).

We also released the **Yukon Parks Strategy**, which will help conserve Yukon's biodiversity in the face of climate change and ensure climate change is factored into the planning of Yukon's protected areas, buffers and corridors.

## Yukon Climate Risk Assessment

In 2020, the Government of Yukon held discussions with Yukon First Nations, municipalities and other experts on how climate is affecting traditional and cultural activities. These conversations will help inform future efforts to maintain the ability for Yukoners to practice traditional and cultural activities on the land. The findings will be included in the Yukon Climate Risk Assessment report, to be published in 2021.

In 2020, we made progress on tailored **hunter education courses** that can be adapted and delivered by Yukon First Nations for First Nations citizens (**action P7**). We continued to discuss training standards and lesson plans with participating First Nations and offered opportunities for First Nations instructors to shadow Government of Yukon instructors.

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In 2020, the Gwich'in Tribal Council held a Community Climate Change Chat in Inuvik that enabled community members to discuss the FutureXChange program, listen to traditional climate change adaptation stories and talk about the importance of protecting wildlife areas in the north.

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## Human health and wellbeing

As of the end of 2020, air quality monitors were installed in **eight** communities across Yukon (**action P11**). These monitors provide real-time data on the amount of particulate matter in the air, which is produced through wildfires and wood burning. The data are publicly available through the University of Northern British Columbia. By 2023, monitors will be installed in all communities across Yukon.

Under *Our Clean Future*, we are also reviewing existing information on food insecurity in Yukon by 2023 (**action P14**). This review will help us to develop a system to **gather and track food insecurity information** consistently moving forward. Reporting and tracking food insecurity data will help us assess our progress protecting and enhancing human health and wellbeing and will inform future actions.

For information on how we are supporting local food production in Yukon, see Area #5.

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In 2020, the Inuvialuit Regional Corporation facilitated training workshops, including on-the-land programming, for environmental monitors and developed an Inuvialuit children's book about energy to support knowledge mobilization and language preservation.

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# AIR QUALITY MONITORING STATIONS

AS OF DECEMBER 31, 2020

 Monitoring station



**8** communities had air quality monitoring stations



## Area #5: Communities

**Under *Our Clean Future*, geohazard and flood maps will be completed for all at-risk communities to inform infrastructure and community design decisions. Emergency management plans and wildfire protection plans will be developed and implemented in all Yukon communities. We will also increase local food production in ways that are low-carbon and contribute to climate resilience.**

### Resilient community infrastructure

Geohazard and flood maps help us identify and understand the parts of our communities most at risk from climate impacts like permafrost thaw and flooding. With this information, we can modify existing infrastructure and decide where and how to build new infrastructure. When significant new infrastructure projects are being designed, a detailed climate risk assessment uses this information to inform the project's design.

In 2020, the Government of Yukon:

- Completed a **geohazard map for Carmacks** as part of our commitment to complete maps for all communities with a high risk of permafrost thaw by 2025 (**action C1**).
- Conducted **three** climate risk assessments for community infrastructure projects in Old Crow, Whitehorse and Teslin (**action C5**).

### Emergency preparedness

In 2020, the Government of Yukon worked to improve how prepared we are for emergencies that are becoming more likely due to climate change by:

- Extending the season for fire crew leaders to ensure we have more **wildland fire crews** available earlier and later in the wildfire season (**action C10**).
- Collaborating with the City of Whitehorse to support their development of an **Emergency Management Plan** that outlines roles, responsibilities and steps to take in the event of an emergency (**action C12**).
- Beginning work on the **Whitehorse South Fuelbreak** that will help protect Whitehorse from wildfires while producing wood that can be used as a heating source (**action C9**).



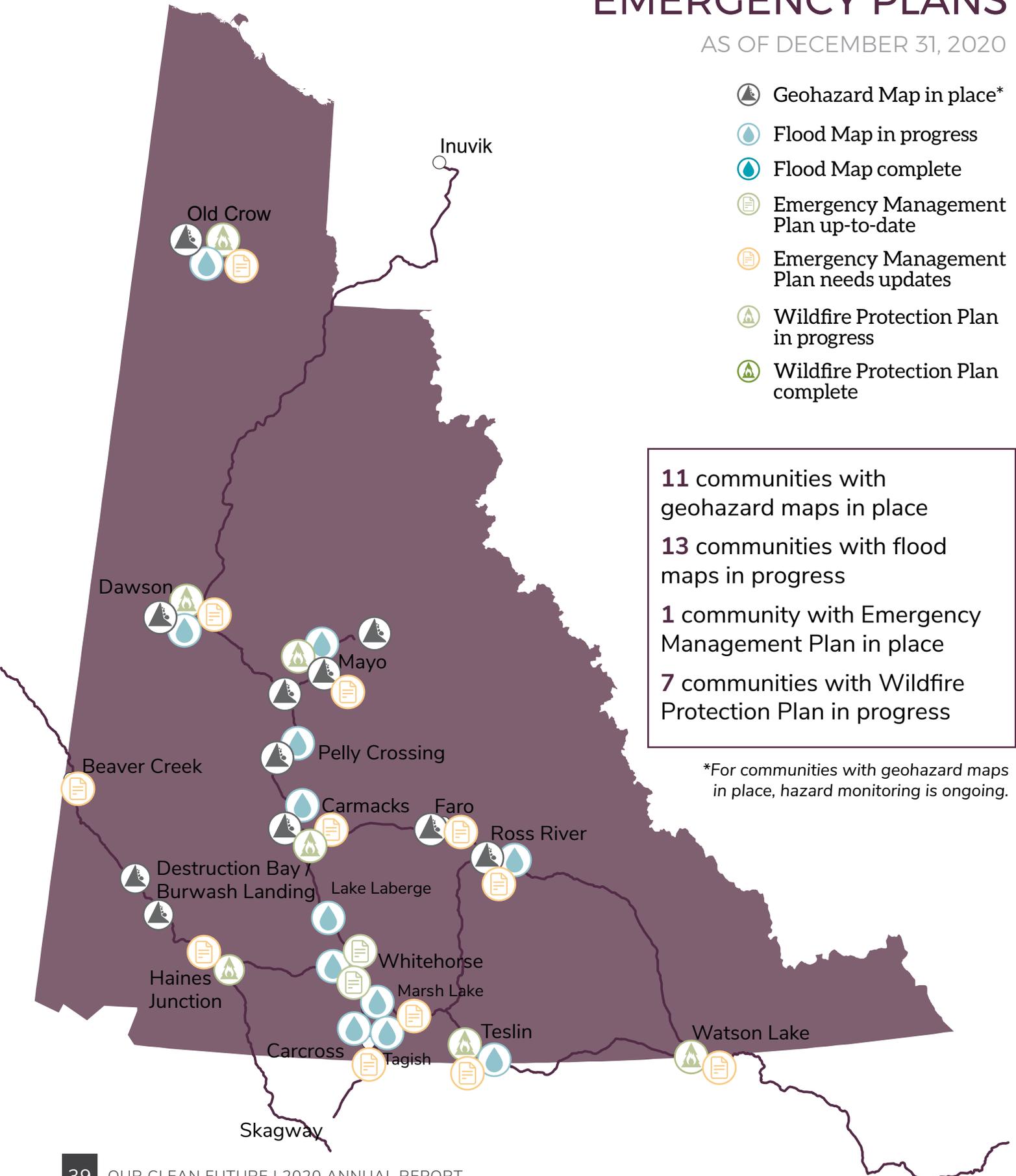
# HAZARD MAPS AND EMERGENCY PLANS

AS OF DECEMBER 31, 2020

- Geohazard Map in place\*
- Flood Map in progress
- Flood Map complete
- Emergency Management Plan up-to-date
- Emergency Management Plan needs updates
- Wildfire Protection Plan in progress
- Wildfire Protection Plan complete

**11** communities with geohazard maps in place  
**13** communities with flood maps in progress  
**1** community with Emergency Management Plan in place  
**7** communities with Wildfire Protection Plan in progress

\*For communities with geohazard maps in place, hazard monitoring is ongoing.





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In 2020, the Council of Yukon First Nations supported nine successful community applications through the Climate Change Health Adaptation and the Climate Change Preparedness in the North funding programs.

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## Sustainable local food production

In 2020, the Government of Yukon:

- Provided access to funding for **three** community garden and greenhouse projects in Teslin, Haines Junction and Mayo (**action C15**).
- Began a research project to investigate how **alternative land clearing practices** could reduce greenhouse gas emissions from agriculture while building northern soils.
- Provided access to funding for **eight** projects that helped agricultural producers adapt to the impacts of climate change, adopt low-carbon practices, and use water efficiently (**action C18**).

## Government of Yukon leadership

The Government of Yukon is committed to supporting local food production in Yukon. As part of **action C14** in *Our Clean Future*, a regional economic development exemption was used to offer an agreement to local food producers to provide food for Government of Yukon operations. An agreement is now in place. Additional work to support local food producers is underway.





## Area #6: Innovation

*Our Clean Future* will see more Yukoners participating in the green economy, reductions in the emissions intensity of Yukon's mining industry, enhanced sustainability of our tourism industry, and improved waste management.

### Innovation and green business practices

#### Skills development

Yukoners require new skills to participate in the green economy and deliver on *Our Clean Future's* ambitious commitments.

The Government of Yukon's Energy Branch is developing a Good Energy Network of service providers in Yukon that will be eligible for green economy professional development opportunities. The Good Energy Network will enable the government to consistently engage with service providers like air-source heat pump installers and energy efficiency professionals and learn about the best ways to support them in their work.

In 2020, the Government of Yukon supported innovation and green business practices by:

- Creating a new Economic Development Fund, which replaces the Regional Economic Development Fund, the Strategic Industries Development Fund, and the Enterprise Trade Fund. Applications to the new fund will be evaluated based on their potential climate impacts and their **alignment with Yukon's climate change and energy goals** identified in *Our Clean Future* (**action I1**).
- Making progress on a **draft Sustainable Procurement Strategy and Implementation Plan** to support Government of Yukon departments in making more sustainable and environmentally friendly decisions when procuring goods and services (**action I2**).



## Resilient and low-carbon mining

In 2020, the Government of Yukon worked with a consultant and advisory group on **guidelines for designing critical mine infrastructure for long-term climate change risk**. These guidelines will inform new provisions in quartz mine licenses by 2022 (**action I6**).

For an update on work to establish an intensity-based greenhouse gas reduction target for Yukon's mining industry (**action I9**), see page 7 of this report.

## Sustainable tourism

The Government of Yukon is developing a **Yukon Sustainable Tourism Framework** to support sustainable tourism development through the annual measurement of conditions across several key elements of tourism (**action I10**). This measurement framework will help us assess progress toward the *Our Clean Future* objective to enhance the sustainability of Yukon's tourism sector.

## Waste management

By 2025, 40 per cent of the waste we generate will be diverted from our landfills. In 2020, 25 per cent of our waste was diverted. In future annual reports on *Our Clean Future*, we will track our progress in this area over time.

By 2030, Yukoners will also generate 10 per cent less waste per person than we did in 2020. In 2020, each Yukoner generated 0.92 tonnes of waste on average. We will compare waste generation in future years to this baseline. By 2030, the amount of waste we generate will be 0.83 tonnes per person or less.

An important step to reduce our waste generation is **eliminating the use of single-use retail bags**. In 2020, the Government of Yukon amended the *Environment Act* to enable the government to ban bags and other single use products (**action I13**).



## Area #7: Leadership

*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.

### Government planning and operations

In 2020, the Government of Yukon:

- Began work on a new **Clean Energy Act** that will legislate our greenhouse gas reduction targets and other commitments in *Our Clean Future* to hold the Government of Yukon accountable (**action L1**).
- Implemented a **new methodology to prioritize Government of Yukon building retrofits** and new construction projects that assigns a score for potential greenhouse gas reductions along with the other four pillars of the Green Infrastructure Program (**action L4**).
- Developed a **climate change training strategy for Government of Yukon employees** and began work on introductory courses to be offered to employees in 2021 (**action L5**).

### Youth education and empowerment

#### Youth Panel on Climate Change

The Yukon Youth Panel on Climate Change was launched in January 2021 (**action L6**). A diverse group of 13 Yukoners from across the territory between the ages of 12 and 25 sit on the panel.

The panelists are learning about climate change and energy issues in Yukon, engaging other youth, and will formally provide advice and perspectives to the Government of Yukon in fall 2021.

#### Land-based programs

Yukon schools follow a modernized K-12 curriculum designed to reflect the Yukon context, including Yukon First Nations' ways of knowing, doing and being. Through this curriculum, Yukon students learn more about where they live through **hands-on, land-based experiential learning activities** in schools across the territory (**action L8**).

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The Council of Yukon First Nations and the Assembly of First Nations Yukon Region have partnered with Yukon University and the Youth Climate Lab to launch and facilitate the Yukon First Nations Climate Action Fellowship for Youth. One goal of the fellowship is to work alongside Yukon First Nations to co-create the Yukon First Nations Climate Vision and Action Plan.

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## Evidence-based decisions

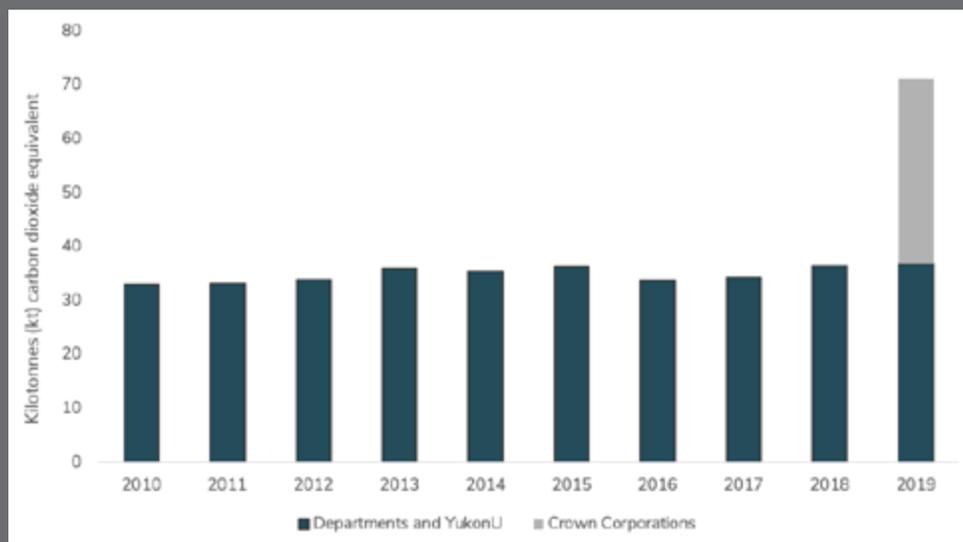
To take effective action, we must understand the problems we are trying to solve and the solutions that are available. In 2020, the Government of Yukon initiated Yukon's first **territory-wide assessment of climate change risks (action L9)**. The diverse team working on the project is respectfully bringing together traditional, local and scientific knowledge and ways of knowing, doing and being to better understand the risks that Yukoners face from climate

change and how we can continue to be resilient in the face of change.

The Yukon-wide Climate Risk Assessment will help the Government of Yukon and partners across the territory **prioritize the actions we take to respond to the impacts of climate change**. This will feed into adjustments to *Our Clean Future* over time. The final report from the Yukon-wide Climate Risk Assessment will be released in 2021.

## Government of Yukon leadership

The Government of Yukon has been tracking greenhouse gas emissions from departments and Yukon University (previously Yukon College) since 2010. In 2019, departments and YukonU released 37 kilotonnes of emissions, which is 12 per cent higher than 2010 levels. In 2019, we expanded our emissions tracking to include Crown Corporations to obtain a more complete picture of the Government of Yukon's emissions. Yukon's Crown Corporations released 34 kilotonnes of emissions in 2019.



Every five years, we verify our emissions through a third-party consulting firm and the Climate Registry to ensure we are following accepted carbon accounting practices. For more information on the Government of Yukon's greenhouse gas emissions, see the detailed backgrounder report.

# **Appendix A: Status of all Government of Yukon actions**

The table on the following pages lists the status of all of the Government of Yukon's actions in *Our Clean Future* as of the time of preparing this report in spring 2021. Actions with deadlines are classified as “not started,” “in progress” or “complete” while actions without deadlines are considered “ongoing.”

#	Action name	Department	Status
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	In progress
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	In progress
T3	Provide a rebate to Yukon businesses and individuals who purchase eligible zero emission vehicles beginning in 2020.	EMR	Complete
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 to explore options to connect Yukon with BC, NWT and Alaska.	EMR	In progress
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	Complete
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	In progress
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	In progress
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	Ongoing
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	In progress
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	In progress
T11	Provide rebates to encourage the purchase of electric bicycles for personal and business commuting beginning in 2020.	EMR	Complete
T12	Continue to support municipalities and First Nations to make investments in public and active transportation infrastructure.	CS	Ongoing

#	Action name	Department	Status
T13	Continue to incorporate active transportation in the design of highways and other Government of Yukon transportation infrastructure near communities.	HPW	Ongoing
T14	Update the Government of Yukon's heavy-duty vehicle fleet by 2030 to reduce greenhouse gas emissions and fuel costs.	HPW	In progress
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	In progress
T16	Train the Government of Yukon's heavy equipment operators on efficient driving techniques for all new equipment by 2022.	HPW	Complete
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	Not started
T18	Implement new policies to enable Government of Yukon employees in suitable positions to work from home for the longer term by 2022.	PSC	In progress
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	In progress
T20	Develop and implement a system by 2021 to coordinate carpooling for Government of Yukon staff travelling by vehicle for work within Yukon.	HPW	Not started
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	In progress
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	Complete
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	In progress
T24	Continue to operate the Yukon Rideshare program to make carpooling and other shared travel easier.	ENV	Ongoing
T25	Complete a climate change vulnerability study of the road transportation network by 2023 to inform the development of standards and specifications.	HPW	In progress

#	Action name	Department	Status
T26	Establish a geohazard mapping program for major transportation corridors and prioritize sections for targeted permafrost study by 2022.	EMR	In progress
T27	Analyze flood risk along critical transportation corridors at risk of flooding by 2023.	ENV	In progress
T28	Continue to conduct climate risk assessments of all major transportation infrastructure projects above \$10 million, such as through the federal Climate Lens assessment.	HPW	Ongoing
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	In progress
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	In progress
H3	Provide low-interest financing to support energy efficiency retrofits to homes and buildings beginning in 2021.	CS	In progress
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	In progress
H5	Continue to provide financial support for municipal and First Nations energy efficiency projects.	CS	Ongoing
H6	Continue to work with Yukon First Nations to retrofit First Nations housing to be more energy efficient.	YHC	Ongoing
H7	Continue to retrofit Government of Yukon community housing to reduce greenhouse gas emissions in each building by 30 per cent.	YHC	Ongoing
H8	Continue to provide rebates for thermal enclosure upgrades and energy efficient equipment to reduce energy use in homes and commercial buildings.	EMR	Ongoing
H9	Assess ways to ensure Yukoners can access adequate insurance for fires, floods and permafrost thaw by 2023.	CS	Not started
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	In progress
H11	Assess options to provide financial support for actions to improve the climate resiliency of homes and buildings by 2023.	ENV	In progress



#	Action name	Department	Status
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	In progress
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	Ongoing
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	Not started
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	Ongoing
H16	Continue to provide rebates for new homes that are net-zero energy ready, aiming for 500 homes by 2030.	EMR	In progress
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	In progress
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.	CS	In progress
H19	Provide low-interest financing to install biomass heating systems in commercial and institutional buildings beginning in 2021.	CS	In progress
H20	Continue to assist First Nations to complete feasibility studies for the installation and operation of biomass heating systems.	EMR	Ongoing
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	Complete
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	In progress
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	In progress

#	Action name	Department	Status
H24	Amend the Air Emissions Regulations by 2025 in order to regulate air emissions from commercial and institutional biomass burning systems to minimize the release of harmful air pollutants.	ENV	In progress
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	In progress
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	Complete
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	Complete
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	In progress
H29	Implement an education campaign for Government of Yukon building occupants and visitors by 2026 to encourage more energy efficient behaviours.	HPW	In progress
E1	While aiming for an aspirational target of 97 per cent, 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	In progress
E2	Substitute some of the diesel used to generate electricity on the Yukon Integrated System and in off-grid communities with clean diesel alternatives like biodiesel and renewable diesel beginning in 2025, aiming for around 20 per cent.	EMR	In progress
E3	Update the Public Utilities Act by 2025 to ensure an effective and efficient process for regulating electricity in Yukon.	JUS & EMR	In progress
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	In progress
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	Not started

#	Action name	Department	Status
E6	Continue to provide financial and technical support for Yukon First Nations, municipalities and community organizations to undertake community-led renewable energy projects.	YDC	Ongoing
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	Ongoing
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	In progress
E9	Develop a framework by 2022 for First Nations to economically participate in renewable electricity projects developed by Yukon's public utilities.	YDC	In progress
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	In progress
E11	Develop legislation by 2023 to regulate and encourage geothermal energy development in Yukon.	EMR	In progress
E12	Research the potential to use geothermal energy for heating and electricity, with a focus along Yukon fault systems, by 2025.	EMR	In progress
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	Complete
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	In progress
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	In progress
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	In progress

#	Action name	Department	Status
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	In progress
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	Ongoing
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	Ongoing
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	Ongoing
P6	Continue to track new and invasive species to Yukon that could impact ecosystems and biodiversity.	ENV	Ongoing
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	In progress
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	Not started
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	Not started
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	Not started
P11	Expand monitoring of concentrations of particulate matter in the air from biomass burning and forest fires to all Yukon communities by 2023.	ENV	In progress
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	In progress
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	Not started

#	Action name	Department	Status
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	Not started
C1	Expand geohazard map coverage to all Yukon communities with a high risk of permafrost thaw by 2025.	EMR	In progress
C2	Develop flood probability maps for all Yukon communities at risk of flooding by 2023 that incorporate climate change projections.	ENV	In progress
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	Not started
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	Ongoing
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	Ongoing
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	Ongoing
C7	Continue to provide technical and administrative support to Yukon First Nations and municipalities to prepare integrated asset management plans.	EMR	Ongoing
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	In progress
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	In progress
C10	Increase the capacity in Yukon Wildland Fire to prevent wildfires and respond to extended fire seasons by investing in staffing in 2020.	CS	Complete
C11	Complete hazard identification and risk assessments (HIRAs) for all Yukon communities by 2022 that include climate change risks.	CS	Not started

#	Action name	Department	Status
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	In progress
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	Not started
C14	Incorporate support, where possible, for local food producers into Government of Yukon procurement processes beginning in 2020.	HPW	Complete
C15	Continue to provide funding for community gardens and greenhouses, especially in rural communities.	EMR	Ongoing
C16	Continue to provide technical advice to assist First Nations and municipal governments with their agricultural and animal husbandry projects.	EMR	Ongoing
C17	Continue to conduct and provide access to funding for research on how climate change could affect local agriculture.	EMR	Ongoing
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	Ongoing
I1	Incorporate greenhouse gas emissions into the decision-making process for Department of Economic Development funding programs by 2022.	EcDev	In progress
I2	Update the Government of Yukon's procurement policies and standards in 2020 to better support sustainable and local procurement.	HPW	In progress
I3	Identify and develop options to address potential regulatory and policy barriers to the growth of green businesses in Yukon by 2023.	EcDev	Not started
I4	Expand the range of relevant professional development offerings by 2023 to enable more Yukoners to participate in the green economy.	EMR	In progress
I5	Create an award program by 2022 to recognize the achievements of local green businesses and organizations.	EcDev	In progress
I6	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	In progress

#	Action name	Department	Status
I7	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	In progress
I8	Increase the Government of Yukon's participation in intergovernmental initiatives related to mine resiliency, low-carbon mining and innovation by 2021.	EMR	Complete
I9	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	In progress
I10	Establish and implement a framework to measure the sustainability of tourism development in Yukon by 2021.	TC	In progress
I11	Develop and implement a system to track greenhouse gas emissions from Yukon's tourism industry by 2021.	TC	In progress
I12	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	In progress
I13	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	In progress
I14	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	In progress
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	In progress
L2	Incorporate a climate change lens into the decision-making process for major Government of Yukon policies, programs and projects by 2021.	ECO	In progress
L3	Incorporate climate change risks into Government of Yukon departmental planning processes by 2022.	ENV	Not started
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	Complete
L5	Develop and offer climate change training for Government of Yukon employees by 2022.	ENV	In progress

#	Action name	Department	Status
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	Complete
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	Not started
L8	Continue to support land-based programs in the Yukon school curriculum that teach First Nations ways of knowing and doing to youth.	EDU	Ongoing
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	In progress
L10	Support the Government of Canada's work to develop a northern climate hub by 2030 that will support access to climate data and projections for the north.	ENV	In progress
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	In progress
L12	Create easy access to technical information and lessons learned about climate change, energy and green economy for governments and stakeholders by 2021.	ENV	In progress
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	In progress



# **Appendix B: Indigenous- and municipal-led actions**

Action	Lead organization	Progress update
<b>TRANSPORTATION</b>		
Purchase an electric or hybrid vehicle and install an electric vehicle charging station in Mayo.	Village of Mayo	Not started – This action is in the planning phase.
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	Not started
Develop a program and educational campaign for reducing winter idling.	City of Dawson	Not started
<b>HOMES AND BUILDINGS</b>		
*new* Upgrade insulation in the City of Dawson Public Works shop from R-22 to approximately R-60.	City of Dawson	
*new* Switch from oil to propane heat for the Dawson City Hall/Fire Hall building.	City of Dawson	
*new* Implement a modern Building Management System for the Dawson City Hall/Fire Hall to increase the efficiency of all heating, ventilation and air conditioning (HVAC) components.	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	In progress – LED lighting and weather stripping have been installed. More upgrades are planned for 2021-22.
Explore opportunities to replace diesel heat in Old Crow with fast-growing, locally harvested willow, distributed through a district heat system.	Vuntut Gwitchin Government	In progress – The Vuntut Gwitchin Government has begun work on a forest resources harvest management plan to explore opportunities for sustainable willow harvest, and to support local fuel wood harvest.
Implement a water metering and bleeder reduction program.	City of Dawson	In progress – design work for this program is underway.

Action	Lead organization	Progress update
Partner with the University of Saskatchewan to improve and develop more comprehensive energy audits in the Gwich'in communities.	Gwich'in Tribal Council	Ongoing – The Gwich'in Tribal Council is working with the University of Saskatchewan to train students in energy security through the Community Appropriate Sustainable Energy Security Partnership.
<b>ENERGY PRODUCTION</b>		
*new* Investigate energy mapping of the Dawson area in a possible collaboration with the Tr'ondëk Hwëch'in First Nation.	City of Dawson	
Develop an energy action plan for the Inuvialuit Settlement Region by 2021.	Inuvialuit Regional Corporation.	In progress – A draft of the energy action plan has been developed and community engagement is being completed.
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	In progress – Detailed design and pre-construction work is ongoing. Funding applications are being advanced to support construction and commissioning.
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	In progress – The Old Crow Solar Project began producing electricity in the spring of 2021 at reduced capacity until the microgrid controller and battery energy storage system are installed. The project is on track to be fully commissioned by August 2021.
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	Complete – The wind measurement tower was installed late fall 2020 and is currently collecting data at a site on Crow Mountain that shows potential for a commercial wind project.

Action	Lead organization	Progress update
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	In progress – A solar system will be installed in summer 2021 that will supply half of the electrical needs at the Camp and a proposal has been submitted to increase it to all of the Camp's electrical needs. Funding has also been secured for two biomass furnaces that will supply half of the Camp's heating needs.
Continue to heat the Village of Mayo swimming pool using solar energy.	Village of Mayo	Ongoing – Using solar energy to help heat the outdoor pool is reducing greenhouse gas emissions and operating costs.
<b>PEOPLE AND THE ENVIRONMENT</b>		
*new* Monitor climate change impacts and capacity building in Gwich'in Communities.	Gwich'in Tribal Council	
*new* Track environmental change in the Gwich'in Settlement Area by enhancing community-driven monitoring of lakes and rivers.	Gwich'in Tribal Council	
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	Not started
<b>COMMUNITIES</b>		
Create municipal incentives for green buildings, businesses, and business practices.	City of Dawson	Not started
Develop a climate change strategy for the Inuvialuit Settlement Region by 2021.	Inuvialuit Regional Corporation	Complete – The climate change strategy was approved in April 2021.

Action	Lead organization	Progress update
*modified* Increase the amount of fire smarting that occurs in Haines Junction and educate residents on the importance of fire smarting.	Village of Haines Junction	
<b>INNOVATION</b>		
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	Not started
Set improved service standards with respect to waste pickup, plowing, and bleeders.	City of Dawson	In progress – A new, efficient garbage truck has been purchased and options for waste levels of service are being explored.
Explore and implement a comprehensive composting program to encourage and/or incentivize increased diversion of food waste.	City of Dawson	In progress – Compost transfer stations are active and curbside compost collection has been identified as a priority.
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	Not started
Continue looking for partnerships to build innovative technical solutions to decrease the diesel dependency in the Gwich'in Settlement Area.	Gwich'in Tribal Council	Ongoing – The Gwich'in Tribal Council is working with other First Nations and governments to reduce dependence on fossil fuels, including support to green energy projects such as the Inuvik Wind Project.
<b>LEADERSHIP</b>		
*new* Retain a climate change coordinator to advance Tr'ondëk Hwëch'in priorities.	Tr'ondëk Hwëch'in	

Action	Lead organization	Progress update
*new* Develop a Yukon First Nations Climate Vision and Action Plan.	Council of Yukon First Nations and Assembly of First Nations Yukon Region	
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	Complete – The Energy and Sustainability Analyst position has been in place since September 2020.
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	In progress – This project is currently at the data gathering stage, which will include a community energy survey conducted during the summer of 2021.
Develop a policy for municipal operations and events, including with respect to resource use, waste, and energy efficiency.	City of Dawson	In progress – Fiver major City of Dawson facilities have been set up on the Energy Star Portfolio Manager.
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	Ongoing – The Gwich'in Tribal Council collaborated and co-designed the program with the Youth Climate Lab, which was recognized as a Clean50 project in 2021.
Continue to host energy and climate change terminology workshops.	Inuvialuit Regional Corporation	Ongoing – Renewed funding for terminology workshops was confirmed in 2021.