



Climate Change, Energy and Green Economy What We Heard

MAY 2019



Table of Contents

Background	3
Engagement Process	4
Participation	5
Public Meetings	5
Youth-Specific Events	6
Survey.....	6
Stakeholder Meetings.....	8
What We Heard.....	9
1. An Integrated Strategy.....	9
1.1 Other Factors.....	11
2. Taking Action.....	12
Leadership and Accountability.....	12
2.1 Barriers to Taking Action	13
3. Our Changing Climate	16
3.1 Environmental Impacts.....	18
3.2 Human Impacts.....	20
3.3 Perceived Causes of Climate Change.....	23
4. Areas of Interest.....	24
4.1 Renewable Energy.....	26
4.2 Homes and Buildings.....	29
4.3 Transportation.....	32
4.4 Land and Resources.....	36
4.5 Communities.....	37

4.6 Food Security.....	40
4.7 Business, Industry and Innovation.....	41
4.8 Skills and Knowledge.....	44
4.9 Other	47
5. Mechanisms for Action.....	49
5.1 Financial Incentives.....	49
5.2 Rules and Pricing	51
6 Feedback on the Engagement Process	52
Next Steps.....	53
Acknowledgements.....	54
Appendices	A-1
Appendix A - Public Engagement Survey.....	A-1
Appendix B – Quantitative Survey Results	B-1
Appendix C – Response Letters from Stakeholders	C-1



What We Heard

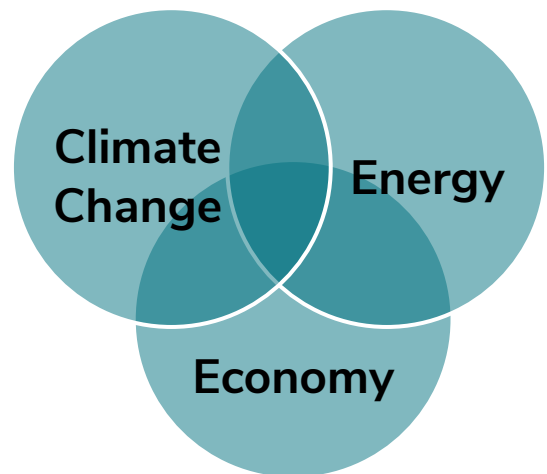
Feedback from public engagement on developing a new climate change, energy and green economy strategy.

Background

The Government of Yukon is working with Yukon First Nations, transboundary Indigenous groups and Yukon municipalities to develop a territory-wide strategy to address climate change, energy and a green economy. The new 10-year strategy will replace the 2009 Climate Change Action Plan and the 2009 Energy Strategy. It will contain priorities and actions that align with Yukon's climate change, energy and economic needs.

The new strategy will help Yukon:

- Reduce our greenhouse gas emissions;
- Enhance access to reliable, affordable and sustainable energy;
- Adapt to the impacts of our changing climate; and
- Build a diverse, green economy.



Climate change, energy and the economy are interconnected. For example, our economy relies on energy and the kinds of energy we use affect climate change. The impacts of climate change, in turn, affect our energy supply and our economy. By addressing all three together – energy, climate change and a green economy – Yukon can effectively respond to the rapid changes happening in our territory.



Engagement Process

Working collaboratively with our Indigenous and municipal partners, we conducted a formal public engagement from October 25 to December 17, 2018. The discussion document, *Climate Change, Energy and Green Economy – What is Important to You?*, was provided to stimulate thoughts on Yukoners' priorities for climate change, energy and the green economy and on potential content to be included in the new strategy.

We used a variety of methods to engage a wide range of people including public meetings, a survey, youth-specific events, and one-on-one meetings with stakeholders. In Whitehorse, we held a kickoff event at the Canada Games Centre to raise awareness of the public engagement and encourage people to complete the online survey.

Notification of the engagement went out to Yukoners and transboundary Indigenous groups through letters, social media, and newspaper, Facebook, radio and TV ads.

The ideas, insights and concerns we heard from Yukoners, along with the research we conducted during the past year, will form the foundation for a new climate change, energy and green economy strategy. A draft of this strategy will be available for public review, anticipated to take place in fall 2019.



Participation

Public Meetings

We held public meetings in 14 communities with 287 participants from Yukon and transboundary Indigenous groups. The Acho Dene Koe First Nation independently held an event in Fort Liard, NT, encouraging their citizens to complete the online survey.

Community	# of participants	Community	# of participants
Beaver Creek	15	Inuvik	15
Burwash Landing	42	Mayo	15
Carcross	33	Old Crow	35
Carmacks	18	Ross River	22
Dawson City	12	Teslin	10
Faro	5	Watson Lake	6
Haines Junction	39	Whitehorse	20
Total	164	Total	123
Grand Total	287		

At the public meetings, participants reflected on and discussed the following questions:

- ▶ What brought you here today?
- ▶ Where should we focus?
 - Jobs and economic opportunities
 - Increase resilience to climate change impacts
 - Reduce greenhouse gas emissions
 - Ensure Yukoners have access to reliable and affordable energy
 - Other
- ▶ What do you see happening now?
- ▶ What does a good future look like?
- ▶ What needs to change to make that good future happen?
- ▶ What would you like to do? What is one thing that could change to help you do that?

A copy of the comments received during the public meetings is available upon request. These comments are not attributed to any particular individual or community.

Youth-Specific Events

Recognizing that decisions made today to address climate change, meet our energy needs, and build a green economy will affect future generations, we held youth-specific events in Whitehorse and communities to ensure their voices were heard and included in the development of the new strategy.

A total of 44 youth attended events in five communities:

Community	# of participants	Community	# of participants
Carmacks	11	Teslin	11
Faro	11	Whitehorse	7
Ross River	4	Grand Total	44

Survey

We distributed a survey online and at public meetings with a mix of open-ended and multiple choice questions. We received 481 responses during the engagement period.

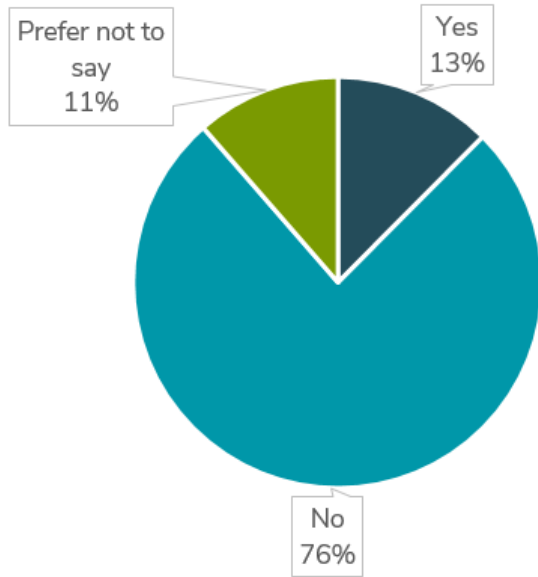
Of the respondents, 13 per cent identified as a member of Yukon First Nation or transboundary Indigenous group (compared to First Nations representing 21 per cent of Yukon's population). In terms of urban and rural participation, 35 per cent were from outside Whitehorse (compared to 22 per cent of Yukon's population).¹ In terms of age, 28 per cent of respondents were under the age of 36 (compared to 43 per cent of Yukon's population).

Please see Appendix A for the survey questions and Appendix B for the numerical survey data. A copy of the open-ended comments received through the survey is

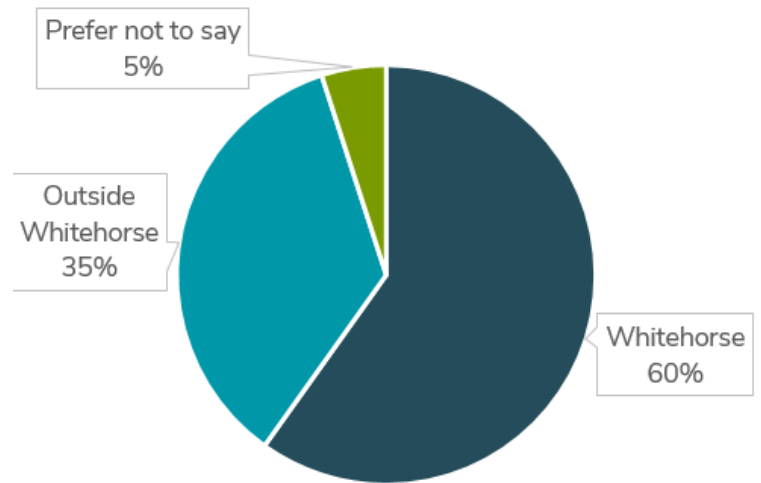
¹ [Yukon population statistics](#)

available upon request. These comments are not attributed to any particular individuals.

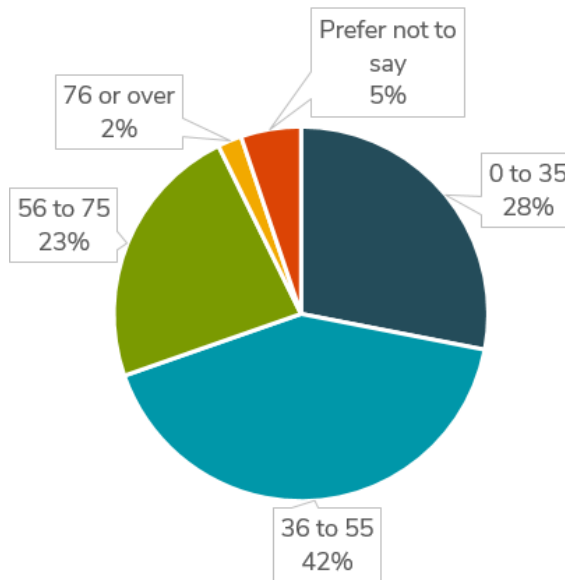
Indigenous Ancestry



Location



Age



Survey Respondent Demographics



Stakeholder Meetings

Over 80 stakeholder groups identified by the Government of Yukon and Indigenous and municipal partners received letters on the public engagement period. In response, the 25 stakeholders listed below requested one-on-one meetings or submitted comments.

- Arctic Institute of Community-Based Research
- Arctic Institute of North America
- Cold Climate Innovation
- CPAWS (Canadian Parks and Wilderness Society) Yukon
- Ducks Unlimited Canada
- Firesmart Whitehorse
- First Kaska GP Ltd. (LFN's Dev Corp)
- Hillcrest Community Association
- Industrial Research Chair
- John Maissan
- Kluane Community Development Corporation
- Low-Carbon Yukon Stakeholder Committee
- Northern Climate Exchange
- P&M Recycling
- Porcupine Caribou Management Board
- Raven Recycling
- Renewable Energy and Storage Group
- Solvest Inc.
- Utility Consumers Group
- Wood Products Association
- Yukon Chamber of Commerce – Energy Committee
- Yukon Chamber of Mines
- Yukon Conservation Society
- Yukon Research Centre
- Yukoners Concerned
- Zero Waste Yukon

Please see Appendix C for a copy of the written submissions received from some of the above stakeholder groups.

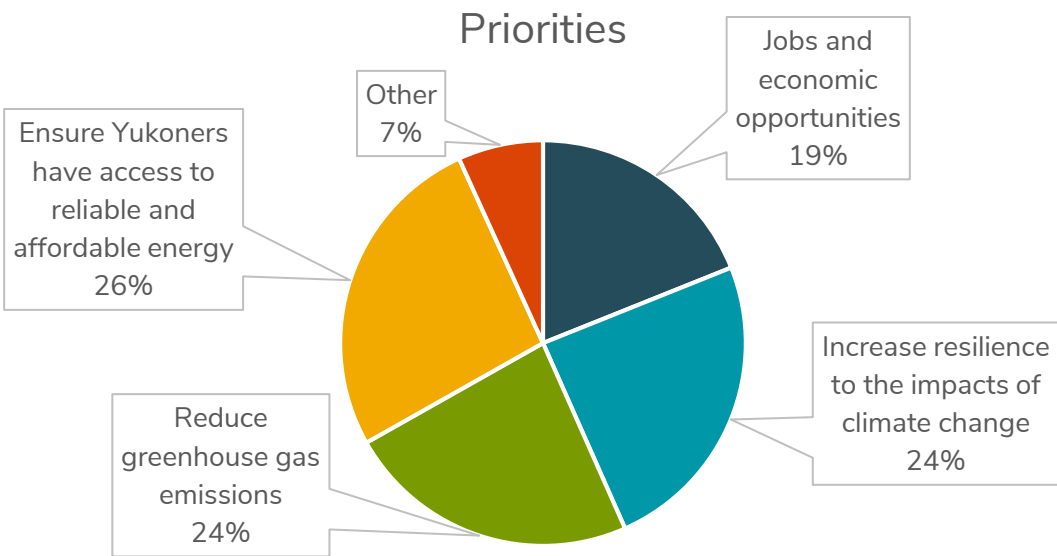
What We Heard

Here is a summary of the input received during the public engagement. As a rough indication of the number of participants providing a similar or certain type of input, we use the following terminology:

A handful:	Around 5
Several:	Around 10
Many:	30+

1. An Integrated Strategy

At the public meetings, we asked participants to prioritize whether the new strategy should focus on one or a combination of the following: jobs and economic opportunities, increasing resilience to the impacts of climate change, reducing greenhouse gas emissions and/or ensuring Yukoners have access to reliable and affordable energy. Each of the options received relatively equal weighting, with jobs and economic opportunities emerging as slightly less important than the other three possible priorities.

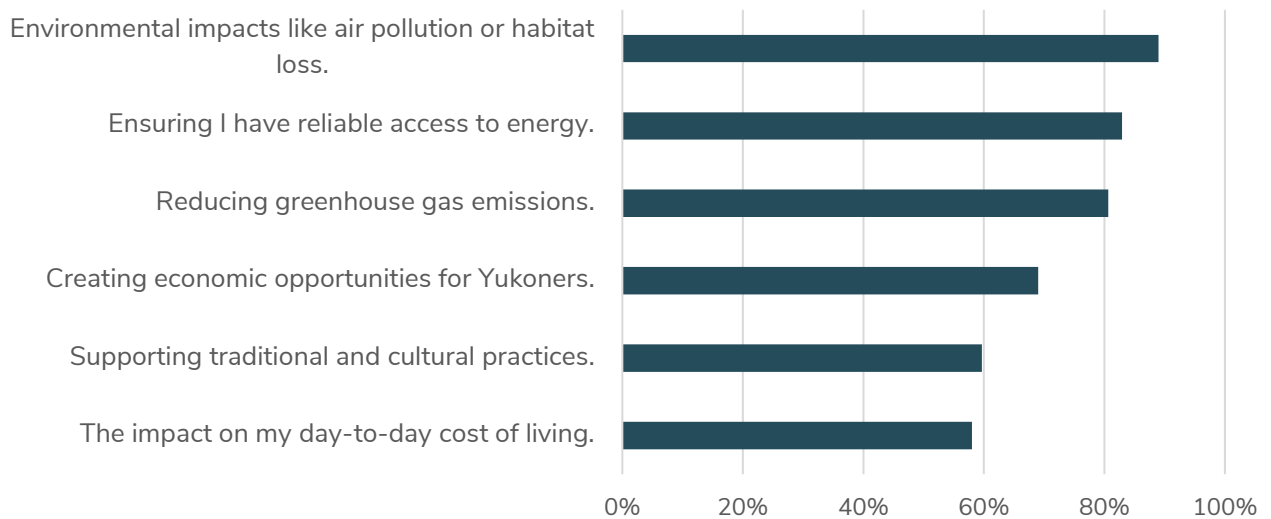


A similar question was included in the survey, asking respondents to rate the importance of six factors when considering potential actions to address climate change, meet energy needs, and grow a green economy. The results are illustrated in the bar chart below.

All factors rated quite high. The factor that rated the lowest was the impact on the day-to-day cost of living. However, 58 per cent of respondents deemed it as “important” or “very important”.

The three most highly rated factors were: environmental impacts like air pollution or habitat loss, ensuring people have reliable access to energy, and reducing greenhouse gas emissions.

When considering actions that could be taken to address climate change, meet energy needs and grow a green economy, how important are the following factors?



Note: the percentages above represent the combined percentage of respondents who rated each factor as important or extremely important.

These results suggest that participants believe all three elements of the integrated strategy – climate change, energy and green economy – are important. Participants also place importance on broader factors such as environmental impacts and traditional and cultural factors.



1.1 Other Factors

Participants identified additional factors as important beyond those highlighted above.

A number of participants highlighted the importance of self-sufficiency for the territory, adding it is an important aspect of Yukon's culture and history that is being lost. They defined self-sufficiency as looking within to meet our own needs and using local knowledge to address local challenges.

Participants also suggested future generations be considered when making decisions, as they will inherit the consequences of current actions. Participants called for informed decision-making that is practical yet ambitious, open-minded, and alert for unintended consequences of actions taken. Informed decision-making also involves considering other perspectives and relying on expertise more than opinions. Several participants recommended that the cost of doing nothing be calculated and considered in the decision-making process.

With respect to building a green economy, one stakeholder group suggested that a green economy recognize the ecological limits of the planet, while several participants spoke to the responsibilities we have as people to protect our environment and recognize ecological rights.

Youth Input

Youth said they want to see more jobs and opportunities in their communities. They said they want to have healthy ecosystems, with clean land, water and air.

A couple of participants expressed their desire for a strong economy, but more expressed concerns about chasing growth, suggesting that growth is the root of sustainability challenges. Participants generally expressed a preference for sustainability over growth and there was sentiment in several communities that the drive for corporate profits is part of the problem. Many participants also emphasized the importance of changing our lifestyles, using only what we need and moving away from a culture of consumption.



2. Taking Action

A common response from participants was that it is time to take action. A couple of participants suggested that it may be necessary to start small, but the majority of those calling for action are looking for significant, ambitious action. Participants emphasized the urgency of climate change and that the stakes are high, suggesting that the response be proportional to the scale of the problem. Many participants made it clear that climate change is a global problem and that everyone should do their fair share in reducing emissions.

A smaller number of participants believe nothing can or should be done, and offered a variety of reasons for this feedback. Several participants stated that Yukon is too small to have an impact on the global climate, and that responsibility for taking action falls to larger countries or cities. Others felt that it is already too late to do anything. A few participants suggested that peoples' moral stress or climate-related anxiety is causing paralysis and/or denial. Participants used words like fearful, worried, frustrated, disheartened, concerned, discouraged, saddened, anxious, and depressed to express their emotional states related to climate change.

Leadership and Accountability

Many participants expressed desire for bold leadership by governments across Yukon. Several called on governments to have the courage to make difficult but informed decisions and to model good behavior even when it is challenging. A handful of participants recognized that several First Nation governments are already leaders in addressing climate change and developing greener economies. Many participants called on the Government of Yukon to support and empower First Nations, municipalities, businesses, not-for-profit organizations, and individuals to plan and take action.

Many participants said Yukon communities can be global leaders in addressing climate change, demonstrating to Canada and the world that ambitious climate action is possible. For example, one stakeholder group suggested that Yukon could be a leader

in integrating many different renewable energy sources such as geothermal, biomass, wind, and solar.

Several participants called on governments to establish clear goals and targets territory-wide and/or internally, and to regularly track and report on progress. Two stakeholder groups called for stringent greenhouse gas reduction targets consistent with the level of action needed to limit global warming to 1.5°C. A handful of participants urged for targets to be enforced through legislation.

A few stakeholders want to see the strategy contain specific actions, in addition to high-level commitments. They urged that those specific actions be measurable and time-bound, along with the flexibility to update and improve them in the future. A few stakeholder groups emphasized that the strategy be sufficiently funded, with adequate resources to support the actions and objectives it contains.

Generally, many participants spoke to the need for political buy-in on the importance of addressing climate change. Several called on politicians and governments to think beyond the length of a political term. Several participants were also concerned that the strategy would not be implemented or would not last longer than the length of the current political term.

2.1 Barriers to Taking Action

Many participants expressed a desire to take action for themselves or future generations but are prevented from doing so by a variety of barriers, whether real or perceived.

Options

Several participants are frustrated with a lack of options for reducing their greenhouse gas emissions and feel that having options would allow them do more than they are able to do today.



Convenience

A few participants noted the importance of convenience in directing people's actions, highlighting that more sustainable alternatives need to be as convenient or more convenient than current greenhouse gas-emitting options.

“I like the idea of being energy efficient as long as it's easy to do.”
– Old Crow participant

Awareness

Many participants suggested that people could be more motivated to take action if they understood the causes and the consequences of climate change. Many participants felt that awareness be raised in a positive, hopeful, and optimistic way. They suggested that when the dialogue is centred on fear, cynicism or despair, people become disengaged from doing anything.

Affordability

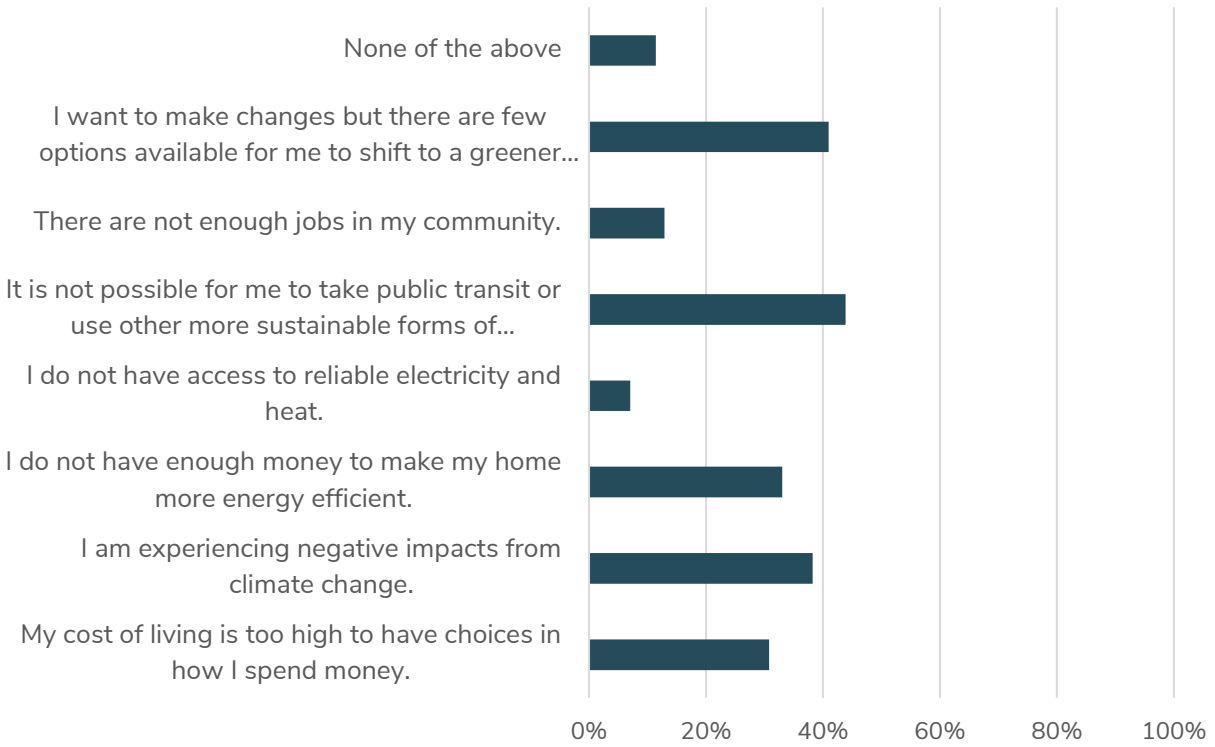
Many participants pointed to the importance of affordability in supporting or preventing change. Many participants called for improvements in the affordability of or in the ability to purchase more sustainable alternatives. In addition, many participants would like to see greenhouse gas-emitting products be more expensive as a disincentive to their use.

Information

Many participants spoke about difficulties accessing information, technologies, and expertise to make the changes they would like to make.

The barriers outlined above are consistent with the survey results showing that respondents are challenged by a lack of options around public transportation and other ways of shifting to a greener lifestyle, and by limited financial resources to make changes.

When you think about climate change, energy and green economy, what issues or problems are you facing?



Note: the percentages above represent the combined percentage of respondents who rated each factor as important or extremely important.



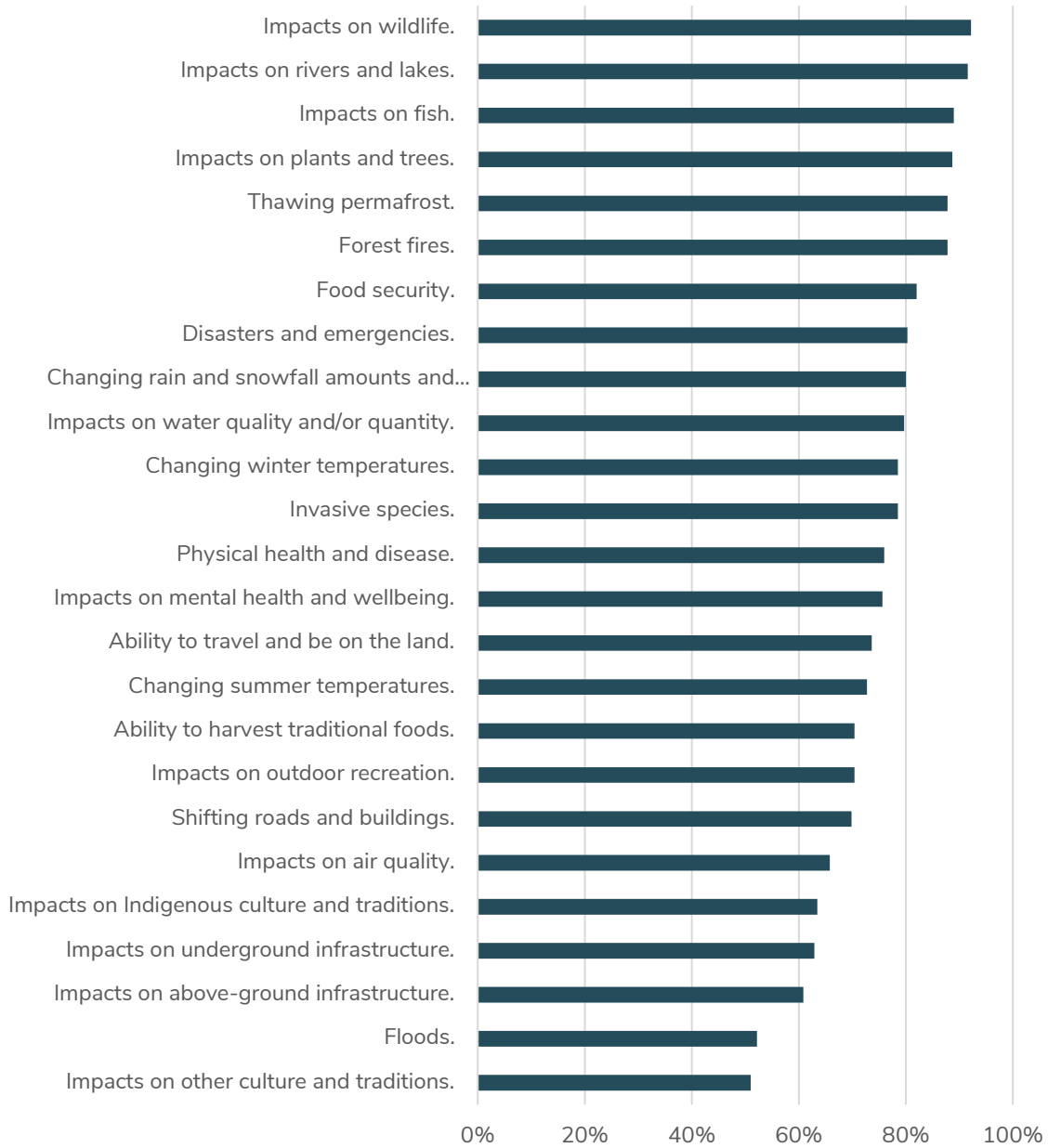
3. Our Changing Climate

Over the past 50 years, temperatures in Yukon have warmed by 2°C and rain and snowfall have increased by six per cent.² During the public engagement, Yukoners clearly expressed that they are already experiencing the impacts of climate change. Participants primarily raised concerns about impacts on both the natural environment and people, while other participants identified potential benefits from climate change or suggested that they are not affected by the changes.

The following chart illustrates the proportion of survey respondents that are “concerned” or “very concerned” about a range of climate change impacts. The greatest concerns related to impacts on wildlife, rivers and lakes, fish, and plants and trees, as well as thawing permafrost and wildfires

² [Yukon Climate Change Indicators and Key Findings 2015](#)

How concerned are you about the following impacts of climate change?



3.1 Environmental Impacts

Weather

Many participants noted changes in weather that they believe are a consequence of climate change. Warmer winters, earlier spring melts, less differentiation between seasons, greater fluctuations in temperature within seasons, more freeze and thaw cycles, increased precipitation and humidity, and more dramatic weather events were all routinely noted by participants. Others noted atmospheric changes, with higher winds and more cloudy days than there used to be, as well as declines in snowfall.

Youth Input

Many youth participants said they are noticing changes to weather, highlighting that temperatures are warmer, lakes and rivers are taking longer to freeze, and there are winter rainfall events.

Air Quality

Participants noted differences in air quality. In the Burwash Landing area, participants have observed more wind-borne dust that is causing respiratory problems and allergic reactions.

Waterbodies and Water Quality

Participants noted changes in waterbodies of all types (including glaciers), with some areas drying out and other areas flooding. These types of observations were noted in all communities. Some waterbodies are freezing later in the winter or not at all. Changes in water temperature are affecting fish and wildlife. Participants noticed more silt in rivers, affecting water quality for fish and for drinking water. A handful of participants expressed concerns about glacier melt and how, in some alpine areas, glaciers and ice patches are gone.

Landscapes

North Yukon/Beaufort region participants, in particular, commented on the changes they have been seeing in the landscape, with coastlines, lakes, and rivers changing,

permafrost slumping and more. They noted that these landscape changes are revealing cultural artefacts. Concerns were expressed about the potential release of toxins, diseases, and methane as permafrost thaws.

Wildlife

Participants commonly noted changes in wildlife, with declines in some species (e.g., frogs, certain birds, bees, butterflies, and gophers) and the arrival of species that did not previously live in the area (e.g., cougar, deer, certain birds and ticks).

Participants noted changes in migration patterns for migratory species like caribou and changes in the behaviours of animals (e.g., bears hibernating later, moose rutting later, and wolves coming to town more often). They suggested that declines in river levels are affecting wildlife.

Youth Input

Youth participants noticed changes in wildlife distribution in and around their communities. They observed animals behaving differently, and changes to the number of animals seen compared to what they recall seeing in the past.

Fish

Several communities noted that there are fewer fish, that fish meat is softer because the water is warmer, and that fish eggs (for eating) are not ready until later in the season. In some communities, participants noted that water levels are declining, resulting in the loss of important spawning grounds. In other communities, the opposite is true; water levels are increasing, resulting in permafrost thaw and erosion, an increase in silt loads in rivers and a reduction in the quality of fish habitat. Participants expressed concerns about the late freeze-up of lakes and the late or lack of freeze-up of creeks and the impact that may have on fish.

Plants

Participants observed changes in plant growth including type and location. They expressed concerns about beetle infestations. Others noted declines in berry production and other food and medicinal plant populations.

3.2 Human Impacts

Travel/Access

Changing conditions are making it difficult for people to travel. Participants in Dawson City noted the loss of their ice bridge. In Old Crow, concerns were expressed about the future of the winter road. In all areas, people who travel the land, particularly for cultural or economic reasons, expressed concerns about the difficulty – or impossibility – of accessing certain areas because creeks and other waterbodies are not freezing over the way they used to.

Youth Input

Some youth commented that less snowfall is preventing them from snowmobiling and reaching trapping areas, while slippery roads are making travel more dangerous.

“It is changing my entire way of life. I cannot fish in the same way. I cannot get to my cabin in the same way. I have to re-learn a lot of bush skills and apply them in new ways.”

– Survey participant

Changes to river levels and river channels are making river travel more difficult and dangerous in some areas. Winter rainfall is also affecting travellers. These participants are concerned about safety and on how this affects them economically. Trappers, in particular, noted that it is increasingly difficult to access their trapping areas.

Economy

Trappers noted that the trapping season is getting shorter. They are also concerned about declines in the quality of the fur they trap as winters warm, further affecting their incomes. Participants also expressed other economic concerns, such as increasing costs of insurance due to climate-related events and difficulties harvesting traditional foods.

Traditional and country food

Participants raised food security as a concern noting the declines in berry production, as well as other food and medicinal plants. Difficulties traveling on the land have led to people eating less country food, which participants said is having an impact on health.

“We need to learn our ecosystems all over again. They’re changing.”

– Ross River participant

First Nations participants throughout Yukon noted that they have sacrificed their salmon harvests in an attempt to improve salmon stocks. A couple of participants noted that they have not been engaging in berry picking because they are concerned about the welfare of bears who are having difficulties finding sufficient food. Several participants were concerned about how continued changes to Yukon’s ecosystems affect access to food and resources.

Gardening and agriculture

One gardener noted increased success gardening as a result of the warmer climate, whereas a few farmers noted that they are facing challenges adapting to changing climate patterns.

Several participants suggested that disruption to food and economic systems elsewhere in the world will affect Yukon negatively.

Wildlife Conflict

Increased incidents of human-wildlife conflicts were noted, which was suggested could be due to wildlife struggling to adapt to changing ecosystems. Participants noted that they were afraid to be on the land as bears are hibernating later and having difficulty finding food.

Water

Participants were concerned about their drinking water, particularly those who use creeks or waterbodies that are drying up.



Recreation

Comments on recreational impacts included: not being able to ski because of declines in snowfall; not being able to travel in certain areas with 4-wheelers because of changes to the landscape; and impacts to winter tourism operations.

Conflict and Human Migration

Participants expressed concern about geopolitical instability caused by climate change elsewhere that could increase human migration and the attractiveness of Yukon as a destination for people seeking a better place to live. A number of participants predicted that, as climate change impacts affect other countries, Yukon will become an increasingly desirable place to live. Several participants expressed concern that large-scale migration and refugee crises could mean more people moving to Yukon and place greater pressure on local resources.

Health

Several participants commented on the health – and especially the mental health – impacts of a changing climate. Airborne dust, toxins, and diseases released through permafrost thaw, and less time spent on the land, can all affect physical health. Participants observed mental health impacts as a result of less time spent on the land, cloudier days, and feelings of despair, fear, stress, depression and apathy about the consequences of climate change.

Maintenance

A couple of participants stated that they are looking forward to warmer weather and increased precipitation because it would reduce the cost of home heating and vehicle maintenance.

Infrastructure

Thawing permafrost is affecting infrastructure, including homes and cabins, roads and the entire community. Concerns were expressed that energy systems are vulnerable as declines in water levels could affect the ability to produce hydroelectricity.

Wildfires

The increasing risk of wildfire due to climate change and especially the threat of fires near communities was mentioned by several stakeholder groups. One group figured that increased average temperatures, lower humidity, and windier conditions would aggravate the situation of heavy fuel loads (wood) in proximity to developed areas around Whitehorse.

3.3 Perceived Causes of Climate Change

The vast majority of participants recognized that climate change is caused by human-produced greenhouse gas emissions. Some participants were unsure of the causes of climate change and came to the engagement sessions to learn more. A small number of other participants believe that climate change has other causes, such as natural variability, polar tilt, or changes in solar activity, or that climate change is not occurring.



4. Areas of Interest

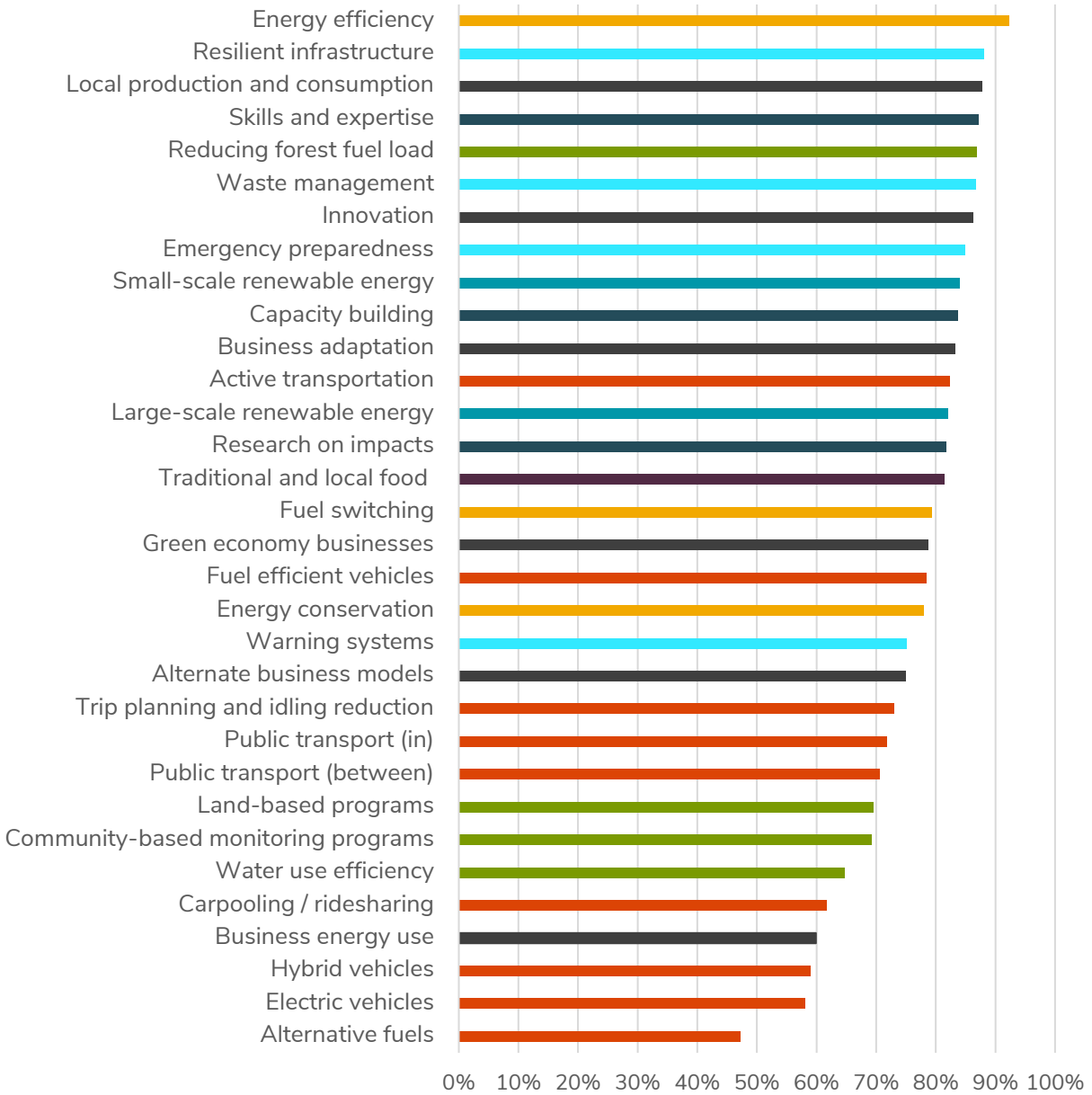
Participants provided many ideas on ways to take action on climate change, energy and a green economy. These ideas are organized into several “Areas of Interest” for ease of communication. The Areas of Interest below are similar to the seven areas originally presented in the discussion document, but they have been slightly adapted to reflect the input received.

1. Renewable energy
2. Homes and buildings
3. Transportation
4. Land and resources
5. Communities
6. Food security
7. Business, industry and innovation
8. Skills and knowledge

The following chart, showing data from the survey, reiterates that there is support for a broad array of initiatives across the eight areas of interest. While some initiatives were identified as most important, all of the initiatives were rated fairly highly with the lowest-ranking initiative, alternative fuels for vehicles, still being considered “important” or “very important” by 47 per cent of respondents.



How important are the following types of initiatives?



Legend

- Renewable energy
- Homes and buildings
- Transportation
- Land and resources
- Communities
- Food security
- Business, industry and innovation
- Skills and knowledge



4.1 Renewable Energy

Many participants called for more renewable energy generation, although a couple of participants would prefer to reduce energy demand rather than increase generation. A few participants questioned the sustainability of green power generation and would like information about energy sources that considers the greenhouse gas emissions and other environmental impacts of each energy type across its full supply chain or lifecycle.

There is broad support amongst stakeholders to use renewable energy to reduce dependence on diesel and other fossil fuels. Stakeholders noted that renewable energy technologies are ready, but that grid stability is an important challenge that needs to be addressed.

Youth Input

Youth participants said they want to see people using more renewable energy, particularly in their homes. One youth wants to see governments subsidizing renewables and not fossil fuels, while another suggested that renewable energy is a smart long-term investment.

A few stakeholder groups suggested that governments pay more for renewable electricity generation, in particular. It was suggested that the Government of Yukon direct the Yukon Utilities Board to accept a premium for renewable electricity generation or to consider the environmental and social impacts of electricity generation.

Many participants called for financial support for transitions to renewable power generation, as costs were frequently raised as a barrier to switching. Several participants called for investments in large-scale renewable power generation, and a handful called for regulations or targets to mandate how much energy comes from renewable sources.

Biomass

Many participants spoke in favour of biomass energy (typically wood) for use at the domestic or district levels. Key reasons for supporting biomass include wildfire abatement, the creation of local jobs, and a local energy supply that could be used for

heat or electricity and reduce dependence on fossil fuels. A few participants, however, were concerned about biomass energy generating greenhouse gas emissions. Stakeholders suggested that all new buildings consider biomass heating as an option, and take into consideration the job creation opportunities in that decision. It was also suggested that the installation of fossil fuel heating systems be banned from all Government of Yukon buildings and that all levels of government install biomass systems to generate local demand for biomass. One stakeholder suggested that there be a grant or rebate program for the purchase or installation of wood-fired heating systems.

Geothermal

Several participants expressed their support for geothermal energy, both deep geothermal energy and geoexchange systems that use heat found just beneath the earth's surface.

Hydro

Several participants would like to see the development of more hydroelectricity projects at both a small/local scale and at larger scales. Several community members pointed to areas of small-scale hydroelectric potential within close proximity of their communities. Certain participants were concerned about the aging of our existing hydroelectric infrastructure and its ability to continue generating electricity as glaciers melt and precipitation levels change. Several participants were opposed to hydroelectricity, recognizing that hydroelectric projects have environmental and social impacts.

Solar

Many participants would like to see more solar energy use and want to install solar systems for their own homes while many others called for large-scale solar energy generation. These participants called for financial support (grants, rebates, subsidies, etc.) for homeowners and the commercial sector, as well as technical support. It was suggested that building codes be updated to require new homes and buildings to be "solar-ready."

A handful of participants raised the issue that solar energy is intermittent and solar energy generating systems may require energy storage technologies.

Wind

Many participants expressed their desire to use more wind energy both domestically and on a larger scale, with most of these participants wanting to see large-scale wind projects. A few participants raised concerns about the environmental impacts of wind energy, particularly impacts on birds and sheep.

Nuclear³

Several participants raised nuclear power generation as a desirable alternative to fossil fuels or to other non-fossil fuel energy sources.

Energy Storage

Several participants spoke to the need for energy storage at various scales, noting that energy storage would enable the use of more renewable energy. Three stakeholder groups specifically identified pumped storage hydro as a promising energy storage option for Yukon. A few participants mentioned “behind the meter” energy storage systems such as electric thermal storage that could be located within a home or business. One stakeholder group noted that electric thermal storage could shift heating demand to electricity and create a market for renewable electricity.

Grid Connection

A couple of participants recommended connecting to the electricity grid outside Yukon. Conversely, a number of stakeholder groups did not support connecting Yukon's grid to British Columbia, suggesting that it would result in fewer local and community business opportunities and lead to lower prices undercutting local small-scale renewable energy

³ While nuclear energy is not technically renewable (because the uranium is consumed as energy is spent), it is mentioned here alongside renewable energies because several participants raised it as a desirable alternative to fossil fuels or to other non-fossil fuel energy sources.

generation. One stakeholder group suggested supporting the grid connection only if it is funded by the federal government.

Independent Power Production

Several stakeholders support independent power production and community-based renewable energy projects. They suggested that communities and individuals be empowered to generate renewable energy and sell it at a reasonable power purchase price to Yukon Energy Corporation and ATCO Electric Yukon. One stakeholder suggested that the Government of Yukon actively engage with communities and First Nations to help them transition away from diesel.

4.2 Homes and Buildings

Over 150 comments were received specifically related to energy efficiency in public, commercial and private buildings. This demonstrates a strong desire for more efficient buildings.

“I am living in a trailer on oil heat and am ashamed of it.”

– Whitehorse participant

Efficiency in Existing Buildings

Many participants called for retrofits to homes, rental housing, commercial buildings and government buildings. A couple of participants noted that, in some cases, it may be better to replace old buildings rather than retrofit them. Many participants supported retrofits for building envelope improvements, installation of low-carbon heating systems and renewable energy installation. They also recommended financial incentives and that they be significant enough to make the retrofit effort worthwhile. Stakeholders recommended a repayable loan program such as Property Assessed Clean Energy (PACE) that enables repayment of retrofits costs through property taxes. It was noted that a similar program, the Rural Electrification Program, exists in Yukon.

A few participants called for support from experts and free energy audits. One participant specifically suggested that community members be trained to conduct energy audits of public and private buildings.

A few participants spoke to how it was impractical to increase their homes energy efficiency due to technical and financial reasons. A handful spoke specifically to the cost of housing making it difficult to afford implementing energy efficiency improvements.

Several renters pointed out their inability to make energy efficiency improvements because they do not own the buildings they live in. Participants noted that the residents of First Nations housing do not own their own homes and, therefore, cannot make personal investments in energy-efficiency improvements. Programs to improve the energy efficiency of these homes were recommended. A couple of participants recommended that buildings be required to publicly share their energy performance, making information available to potential tenants or purchasers.

One stakeholder group specifically said it would like to see strong energy efficiency standards for buildings constructed by the Government of Yukon.

Efficiency in New Buildings

Many participants recommended that new buildings be constructed to higher energy efficiency standards. Many called for changes to building codes or bylaws to establish higher energy efficiency standards, to ensure buildings are constructed using techniques (such as building orientation) that improve energy efficiency or to create requirements to install renewable power systems (like mandatory solar on new builds). A handful of participants recommended financial penalties for buildings not constructed to high-efficiency standards.

One stakeholder group noted that the upfront costs of green construction can be prohibitive, particularly in communities, and urged the Government of Yukon to develop a loan program to support green construction. Similarly, a handful of public meeting participants spoke to the cost of housing making it difficult to afford building to a high-efficiency standard.

Building Size and Design

Several participants raised the issue that lifestyle choices are pushing the construction of large houses. The comments highlighted the option of building smaller houses, including tiny houses. It was felt that incentives to build small are non-existent. In addition to smaller homes, participants spoke to specific building designs or methods to improve energy efficiency, including round homes, building upwards, and building underground.

Behaviour

Several participants spoke to their household's energy consumption habits, the steps taken to reduce their consumption, and changes they would like to make (e.g., switching to efficient lightbulbs, turning off lights, purchasing energy-efficient appliances, using timers, and taking shorter showers). A couple of participants were concerned that some energy efficiency products are not actually "smart" over the lifetime of the product. Several participants requested guidance on what they can do to be more energy efficient.

Stakeholders promoted energy conservation (reducing energy use) as a key part of the solution. Two stakeholder groups specifically urged the government to stop subsidizing electricity prices, with the rationale that higher prices will encourage people to conserve electricity.

Demand-side management

Eight stakeholder groups support managing electricity use through demand-side management initiatives such as time-of-use pricing, and want to see more done in this area. They noted that demand-side management makes the electricity grid more resilient, decreases peak capacity needs, and can result in cost savings for homeowners. It was suggested that the Yukon Utilities Board could be directed to support demand-side management. Several of these stakeholders are also supportive of using smart-grid technologies to further manage electricity supply and demand.



Fuel switching

Several stakeholder groups mentioned the option of converting buildings to electric heat (referred to as “fuel switching”). While the overall opinion supported fuel switching, concerns were raised about potential impacts on electricity rates and electricity demand. One stakeholder group suggested that any negative impacts on utilities would be temporary because an increase in electricity demand would encourage more renewable energy development in the long term.

District Heating

Three stakeholder groups expressed an interest in district heating systems using biomass or geothermal as an energy source to heat multiple buildings or facilities.

Climate Impacts – Permafrost and Precipitation

A handful of participants raised concerns about how permafrost shifting will impact private, public, and First Nations housing, public buildings and transportation infrastructure. This concern was especially prevalent in Dawson City, where increasingly warm temperatures are making it difficult to build the ice bridge and municipal infrastructure (recreation centre) is affected and in Ross River, where the school and other buildings are shifting. Concern was expressed about increased precipitation and the implications for homes built with wooden foundations.

4.3 Transportation

Public Transit

Public transit was mentioned many times, both within and between Whitehorse and the communities. Improvements to existing public transit services were commonly suggested, with participants looking for better hours, better routes, better connections and increased frequency. Participants felt that public transit could be free, less expensive, or that tax rebates could be offered for bus passes.

Regional Public Transportation

There was a desire to have transportation options between Whitehorse and the communities – for passengers, but also for shipping groceries and other items. Residents and business owners alike requested these services, especially business owners who take time away to transport inventory from Whitehorse. Feedback suggested that the government or the private sector could provide these services but it may require financial support to make it feasible.

Active Transportation

Many participants would like to do and see more people do active transit (such as walking and cycling). Comments noted a lack of biking routes, both within and leading into urban centres, safety concerns (such as loose dogs), lack of snow removal on paths, lack of safe highway crossings and icy surfaces. These issues were referenced several times as factors discouraging people from walking and biking. A few participants want to see better bike storage options to prevent theft and vandalism.

Travel by dog team was mentioned a handful of times, with other participants wanting to see a return to dog-powered travel. At least one participant spoke about how current laws make it difficult to have and feed a dog team.

Car Sharing

Several participants suggested carpooling, car sharing, and other sharing economy approaches (like Uber and Car2Go), with some of these participants wondering how to coordinate and implement such ideas into reality.

Electric/Hybrid Vehicles

Many participants want to purchase electric and hybrid vehicles, while a couple of participants want hydrogen-powered vehicles. Many of those looking for electric or hybrid vehicles said they would like to see financial incentives (subsidies or rebates) to make it easier to purchase, both for individuals or businesses. A couple of participants said they would like more electric or hybrid vehicles available in Yukon. Many spoke of the need for charging infrastructure around the territory and said the lack of it is a

barrier to uptake. They suggested that infrastructure be installed in advance of demand. One stakeholder specifically suggested that the Government of Yukon invest in Level 3 “fast-charging” stations to enable electric vehicle use between Whitehorse and communities. Many participants recommended that Government of Yukon’s vehicle fleet be converted to electric vehicles.

Fossil Fuel Vehicles

Several participants spoke to reducing the number of higher-emission vehicles, with ideas ranging from increasing taxes and registration fees for high-emissions vehicles, to raising the stigma of using large vehicles, to prohibiting vehicles that pollute over an acceptable threshold.

Motorized Recreation Vehicles

Several participants mentioned motorized recreation vehicles with concerns over damaging trails, expressing preference for foot travel (including for hunting). Participant recommendations included banning motorized recreation vehicles in some areas and charging higher taxes or registration fees.

Community Design

Participants pointed to the way communities (and country residential areas) are designed as contributing to the transportation problem. With longer distances to travel and no public transit to country residential areas, commuters are forced to drive. It was felt that communities/cities are designed for cars, not people. Those calling for an increase in active transit shared these sentiments.

Food Transportation

Several participants spoke to Yukon’s reliance on shipped food and goods, with a handful calling for green transportation solutions. Others called for locally grown food and produced products. There were sentiments that people in communities buy food locally to reduce the number of trips to Whitehorse.



Downtown Parking (Whitehorse)

A handful of participants believe that the availability and affordability of downtown parking is encouraging vehicle use. It was recommended that large downtown employers, including the Government of Yukon, not offer a downtown parking subsidy and/or charge staff for parking. Offering bus passes was recommended as an alternative.

Road Infrastructure

A couple of participants recommended dis-incentivizing driving, or slowing drivers down, by letting the roads degrade and redirecting the financial resources into other areas. However, one stakeholder group suggested improving the quality of highways as a way to reduce emissions.

Idling

Vehicle idling was mentioned by several participants, with recommendations to prohibit and penalize idling, although a couple of participants suggested allowances for colder temperatures.

Aviation

One participant mentioned they would like to see more carbon offset options for those that fly, and that those carbon offsets could be used to support local businesses.

Transportation Safety

A few participants expressed concerns about road safety as roads conditions are becoming more hazardous due to the changing climate. Safety issues were also raised by those who travel on the land, with lakes and creeks no longer freezing like they used to and river channels changing rapidly. (See Human Impacts section.)

Reducing travel

Many participants would like to see less travel in general. Ideas included less air travel, including for government business, and the use of teleconferencing and live feeds. Participants did recognize that there are challenges with teleconferencing as an

alternative to travel. Other suggestions were to stop driving small distances, and for community members to make fewer trips or carpool to Whitehorse. Coordinated travel for government employees within Yukon was mentioned.

4.4 Land and Resources

Over 130 comments were received on the importance of protecting ecosystems or specific aspects of ecosystems such as land, water, air and wildlife. Suggestions for how to protect ecosystems included recognizing the land as having rights, enacting stronger regulations, and conducting environmental cleanups and reclamation.

Ecosystem Services

A few stakeholder groups said it was important to recognize and capitalize on ecosystem services as part of a green economy. In particular, three groups noted that boreal ecosystems store immense amounts of carbon and protect these lands, or that enhancing tree growth will help sequester carbon. It was also noted that wetlands sequester carbon and provide other important services like water filtration. One stakeholder group suggested that there is potential to sequester carbon in wood products.

Landscape Planning

Several participants spoke to the importance of land use planning at local and regional levels, with conservation being a priority within the land use planning process. A stakeholder group recommended that the Government of Yukon practice landscape-scale conservation planning, with two groups emphasizing that ecosystem connectivity must be maintained. It was suggested that ecosystems remain intact to allow species to shift their ranges as they adjust to climate change, and that ecosystems that can act as “climate refugia”⁴ be identified and protected.

⁴ Climate refugia are areas where the impacts of climate change are anticipated to be more moderate. These areas can therefore help species persist as the climate continues to change.

“You have missed the mark on the most important impact of us changing the climate: decimation of Yukon's biodiversity. The only good solution to this is a conservation network of big protected areas and good corridors between them. Yukon needs to plan for this and do it now while we still can.”

- Survey Participant

Wildfires

Many participants had suggestions on how to adapt to increased wildfire risk and demonstrated support for a range of actions to protect communities. A handful of participants specifically spoke in favour of the fire smarting initiatives. Two participants recommended that lower insurance rates be provided for homes that have been fire smarted. A handful of participants recommended that fire smarted biomass be used for energy generation. One stakeholder group suggested fire breaks be constructed around communities in addition to fire smarting. Not all participants were in favour of the Fire Smart program. One participant was concerned about the loss of greenbelts, while another felt that the current method of fire smarting leads to increased fire risk over time. Another suggestion was to amend building codes or create guidelines to make buildings and priorities safer.

4.5 Communities

Disaster Prevention and Preparedness

Many participants are concerned about our ability to respond to disasters. While a couple of participants expressed concern about earthquakes, one mentioned flooding, one mentioned wind and nearly all of the comments referenced wildfires. Several participants commented exclusively on the current risks and how they perceive them to be increasing. Several participants suggested managing those risks through such actions as firebreaks and biomass reduction efforts, establishing priority zones for fire risk management, amending building codes and establishing emergency water distribution plans.

Emergency Preparedness

Several participants were concerned about emergency preparedness measures, with a few participants feeling that the current level of preparedness is inadequate.

Suggestions included developing emergency response plans or providing more information about plan specifics (such as information about where to go in an emergency), and using a range of communication systems for reaching citizens in an emergency (such as using sirens and older technologies that some people still use).

Waste Management

There were over 150 comments about waste and waste management. Generally, people would like to see waste reduced. Many participants pointed to packaging practices and single-use plastics as being problematic, with several calling for pressure to be applied to retailers and manufacturers. Several participants called for bans on plastic bags and single-use plastics. A few participants called for bans on paper cups and plastic cups, including at fast food restaurants. Several participants called for zero-waste initiatives and a few others said they would like to see manufacturers and retailers regulated or taxed for packaging and products designed for short lifespans. Two stakeholder groups specifically recommended an Extended Producer Responsibility program.

Many participants called for composting programs to be available in their communities, including commercial composting. It was suggested that respecting and sharing with wildlife be considered by using bear-proof bins.

Youth Input

Many youth participants urged people to use less plastic and would like to see more reusable products and easier access to recycling facilities. They want to see an end to garbage and littering.

Even more participants spoke about recycling and reusing, with recommendations ranging from having community-specific support for recycling and repair programs, to requiring products to be made with materials that can be recycled profitably, to having an integrated waste management system for the entire Yukon that would cover all

types of materials including metals, vehicles and batteries. A couple of participants suggested that these services could be contracted to local businesses and organizations. One stakeholder group recommended that the Government of Yukon expand the designated materials recycling program or the deposit-refund system, suggesting that recycling can only be increased in Yukon if recycling operators receive more revenue or funding. More generally, a few stakeholder groups urged for progress toward a zero waste, circular economy.

A handful of participants would like to see waste incinerated and used for energy. A couple would like to see clothes reused. Other ideas included using grass clippings for remediation, shredded paper for hog bedding, finding uses for old tires, reusing building materials, and disassembling and remanufacturing e-waste products in Yukon. While one stakeholder group believes there is a limited market for refurbished or remanufactured products in Yukon, they suggested the Government of Yukon could create a market for these products by mandating the use of locally produced compost in landscaping and land reclamation activities or using waste oil burners.

Community Design

Several participants – particularly those in Whitehorse – suggested communities be designed in an efficient, environmentally conscious fashion. They suggested zoning for higher density, district energy systems, and re-imagining using the edges of our communities for agriculture, recreation, and fire protection.

They also suggested designing communities around active transportation rather than vehicles, and passing bylaws that reduce greenhouse gas emission such as building codes, anti-idling bylaws and environmental protection rules.

Energy Use

A few participants mentioned municipal/community infrastructure and services like waste management, water treatment, and street lighting as being energy inefficient and in need of improvements.

4.6 Food Security

Food Costs

Several participants spoke to issues of food affordability, with some of these participants concerned about the cost of living and the ability to put food on the table. It was recognized that, for those struggling to meet their basic needs, there is no room to invest in personal food production or energy efficiency. One participant called for lower prices for locally-produced food so more people can afford local food.

Local Food Production

Many participants called for local food production as a way to enhance food security, reduce transportation emissions and keep money in the local economy. Suggestions for local food production ranged from private, front/back yard gardens and greenhouses, to community gardens/greenhouses, to more agriculture and aquaponics. One stakeholder group called for financial incentives for sustainable local food production while a couple of participants recommended workshops on food gardening. There was a clear desire amongst many participants to buy local food.

Agriculture

Farmers noted challenges posed by changing climactic conditions, recognizing that crop varieties and farming methodologies will adapt as temperatures, frost patterns, and precipitation changes. A couple of participants recognized agriculture as an industry sensitive to scale, which affects economic viability. One participant called for consistent funding to support research into edible plant varieties for Yukon.

A few participants suggested that agriculture harms local ecosystems and called for changes to agricultural land policies and regulations that both support agriculture and reduce negative impacts.

Wild Food

Several participants spoke to the importance of country food (i.e., hunted and gathered foods). The comments were mixed with concerns about hunting pressures on wildlife

populations, declines in berry and root plant productivity and the importance of habitat protection. One stakeholder group suggested that Indigenous conservation methods be used to protect traditional food sources.

Food Transport

Several participants spoke to issues with food transportation and logistics, from both a food security and climate change perspective. Concern was expressed about the reliability of food from regions experiencing the impacts of climate change, as well as the emissions produced from transporting food over great distances. Concerns were also expressed about transportation within the territory, with food being shipped through some communities only to be transported back, or community residents driving long distances for groceries. A few participants in communities expressed a desire to have a local grocery store. One participant expressed a desire for government to support food co-ops in the communities. A few stakeholder groups suggested that food be delivered to communities rather than many individuals driving to Whitehorse to buy groceries.

Diet

Several participants suggested eating less meat and focusing on healthy and plant-based foods. A couple of participants expressed interest in cultured/synthetic meat.

4.7 Business, Industry and Innovation

Several participants spoke of focusing on a green or alternative economy, with several looking forward to green economy jobs for themselves and others.

Suggestions for a green economy included placing emphasis on non-resource extraction economic activity, building a circular/ regenerative economy, focusing on local, sustainable, and small businesses and working with social enterprises.

The discussion on what industries that could be part of a green economy raised some tensions. For example, some participants wanted more tourism while others pointed to the environmental harm caused by transporting tourists around the planet.

Specific policy suggestions to support a green economy included making information available to businesses, supporting (and not suppressing) innovation and invention, incentivizing businesses to be greener through financial and non-financial methods, and implementing green procurement practices.

A few participants said that large industries must play their part, suggesting that the work of addressing climate change not fall on individuals and small businesses alone. One stakeholder group urged government avoid offering exemptions to select industries from climate change policies or regulations.

Green Businesses

A few stakeholders expressed support for social enterprise and green businesses. One group said entrepreneurs and business owners interested in green ventures are facing outdated policies, processes and regulations that do not support emerging innovative solutions. They suggested working together to identify barriers and find solutions. Participants spoke directly to investing in green businesses and industries, with some of these participants wanting more options and opportunities for social finance (investing in businesses that offer a community or environmental benefit).

Investment

Many participants spoke to the need for investment, with some of these participants speaking to making sure that government is making green investments and divesting (or not investing in or subsidizing) industries and sectors that contribute to greenhouse gas emissions. The petroleum industry was explicitly mentioned numerous times.

Mining

Mining was mentioned by many participants, with several being opposed to mining and several being in favour with changes to environmental practices. Several participants would like to see green solutions for mining and a few participants called for stricter waste and emissions regulations. A couple of participants called for incentives for the industry to reduce their fossil fuels use. A couple of other participants expressed their concerns about governments focusing too much on non-renewable resource

development and not enough on developing a green economy. One stakeholder group recommended that the Government of Yukon modernize mining royalties and use the revenue to support a transition to a green economy.

A handful of participants recognized the impact of mining on Yukon's energy use. A few participants suggested that mines be required to produce their own energy onsite or to have a percentage of their power needs provided from off-grid renewable energy sources. One stakeholder group suggested that mines be required to contribute to clean energy infrastructure or to fund energy efficiency initiatives that would balance out greenhouse gas emissions over the mine's lifetime.

Green Procurement

Several participants spoke about government procurement practices. They wanted to see projects and purchases be as green as possible, that green or social procurement criteria be incorporated into the tender evaluation process and that there be a focus on sourcing local supplies. They also wanted government vehicles to be replaced with electric vehicles.

Carbon Credits

A couple of participants expressed an interest in carbon credits, with one participant suggesting that offsets could be used to support local businesses. One stakeholder group expressed interest in generating carbon credits from sustainable forestry as a way to generate revenue for their community.

Just Transition

A few participants spoke to the importance of considering those who may find themselves out of work due to initiatives addressing climate change, specifically mentioning oil and gas and other resource extraction workers. One participant recommended that workers in the mining and resource development sector be retrained for greener jobs.

4.8 Skills and Knowledge

Education

Well over 200 comments were received on the importance of education and outreach in relation to climate change, energy and the economy. Many comments spoke specifically to training within the education system, all the way from elementary school to college/university. While there was a significant focus on youth, many emphasized the importance of educating everyone in the community, regardless of age. Several respondents spoke to the need and desire to educate themselves, the responsibility to teach their families, and the collective responsibility to teach others. Teaching by example was cited by several participants, as was learning from others, both inside and outside of the territory.

Youth Input

Youth participants said they want education in a wide variety of areas, ranging from climate change science and how to reduce greenhouse gas emissions to gardening and career planning. They also expressed a desire for meaningful involvement in decision making, such as through youth councils.

Many respondents specifically pointed to teaching Indigenous cultures, languages, traditions and worldviews as a way to combat climate change. Some of these participants specified that the school curriculum be indigenized and that investments be made in Indigenous cultural practices in schools. Others suggested that education take place on the land. Stakeholders mentioned the importance of empowering new generations of Indigenous community leaders.

Awareness

Many participants called for efforts to raise awareness of climate change in general, as well as its causes and consequences and possible actions or solutions. Several participants expressed their desire for more honesty on the severity of climate change

and its potential impacts. People wanted to know what can be done in real, tangible ways that will have a positive impact. It was recommended that marketing or informational materials be available in a variety of mediums. A handful of participants called for demonstration projects to show others what can be done and how.

Training

Several participants would like training opportunities, either for themselves or for others. These participants are looking for technical skills to install and maintain renewable energy systems, to garden and improve food security, teach others about climate change, and to be safe on the land. A handful of participants requested that educational resources or technical information be available for people who want to do their own renewable energy installations.

Several participants would like to see education or training for jobs in the green economy and renewable power generation, including co-op placements. A stakeholder group urged for training and education for contractors to learn best practices for implementing energy efficient retrofits to existing buildings. A couple of participants asked for this training to be delivered in the communities so that the necessary skills can be available to those outside of Whitehorse.

Access to Expertise and Services

Many participants spoke to needing access to expertise and services, ranging from “tell me what to do” to “do it for me.” Participants are looking for support from both the public and private sector. Many of these participants said their lack of access to expertise or services is preventing them from taking action.

“I’d like someone to come to my home to tell me what to do.”

- Carmacks Participant

Collaboration and Information Sharing

Many participants pointed to working together and suggested that this collaboration happen at the citizen-to-citizen level as well as between governments, businesses, and

not-for-profit organizations. It was noted that this may require finding new ways to work together. Several participants called for structures or mechanisms to improve collaboration and communication on climate change initiatives including boards, alliances, and community representatives. One stakeholder group noted that communities that have undertaken renewable energy projects have a lot of information and expertise they can share with others. It was also mentioned that communities have their own ideas and solutions and that government listen and work to implement their plans for their future.

“People aren’t being taught about traditional land use, medicines, and different perspectives.”

- Mayo Participant

Traditional Knowledge

There were over 60 comments about the importance of traditional knowledge and values as ways of addressing climate change. Many participants spoke to the value of traditional knowledge and the importance of both using and perpetuating traditional knowledge through inter-generational transmission. Many participants highlighted the importance of being on the land and of how that connection makes it easier to live in harmony with the land. Land-based education and experiences were commonly recommended.

Youth Input

Many of the participating youth expressed a desire to reconnect with the land and regain their culture and traditions, including traditional food, hunting, fishing, and trapping. They noted the importance of reconciliation and decolonization.

A handful of participants said that now is the time to talk to the Elders and research the history of how it used to be and the changes being seen today. Participants also recommended that trappers and hunters who know the land be involved in research



and other studies, and that there be more local input into decision-making using traditional knowledge.

A stakeholder group recommended that the Government of Yukon increase the use of local and Indigenous knowledge alongside scientific knowledge as it works towards a sustainable circular economy and green society.

Many participants called for a return to traditional ways of life, noting that this does not necessarily mean abstaining from contemporary technologies. Rather that, renewable technologies can be incorporated into traditional ways and that traditional ways can be used to inform new technologies and approaches.

Research

Many participants called for more research to help with informed decision-making for both governments and individuals, while a handful felt enough research has been done and that resources are better spent taking action. Those that seek more research suggested things like economic impact assessments for communities, health impact assessments, pilot and demonstration projects, and working with people who know the land. Communicating the findings from this research was seen as important. Some participants expressed opposition to looking outside of the territory for solutions while others recommended looking outside of Yukon and at other northern regions in particular for potential solutions.

4.9 Other

Some of the feedback received was in areas outside the scope of the new climate change, energy and green economy strategy.

Fossil Fuel Development

A handful of participants were interested in exploring fossil fuel opportunities in Yukon such as using local coal resources with carbon capture and storage, developing and exporting Yukon oil and gas, or using local oil and gas rather than importing energy. Conversely, two stakeholder groups urged for a permanent ban on fracking and other

fossil fuel development in the territory. Fossil fuel development will not be addressed in the new climate change, energy and green economy strategy, as it would require its own comprehensive engagement, research and planning processes to determine the best path forward.

Carbon Pricing

Since 2017, the Government of Yukon has engaged extensively with Yukoners about their perspectives and priorities relating to a carbon pricing rebate in the territory. Many participants also shared their thoughts on carbon pricing during these engagement sessions.

Over two thirds of the participants that mentioned carbon pricing are supportive of a price on carbon, while a handful of participants were looking for more information. A national price on carbon is a federal policy being implemented by the Government of Canada. You can find more information about carbon pricing on the [Government of Canada's website](#).

Participants also shared thoughts about how they think revenues from carbon pricing should be used, with several participants suggesting that revenues should support low-carbon programs or projects. The Government of Yukon has committed to return all revenues from the Government of Canada to Yukoners in the form of rebates. In 2019, the Government of Yukon announced the details of the Yukon Government Carbon Price Rebate, which was informed by conversations with Yukoners. Details of these conversations can be found at [EngageYukon.ca](#).



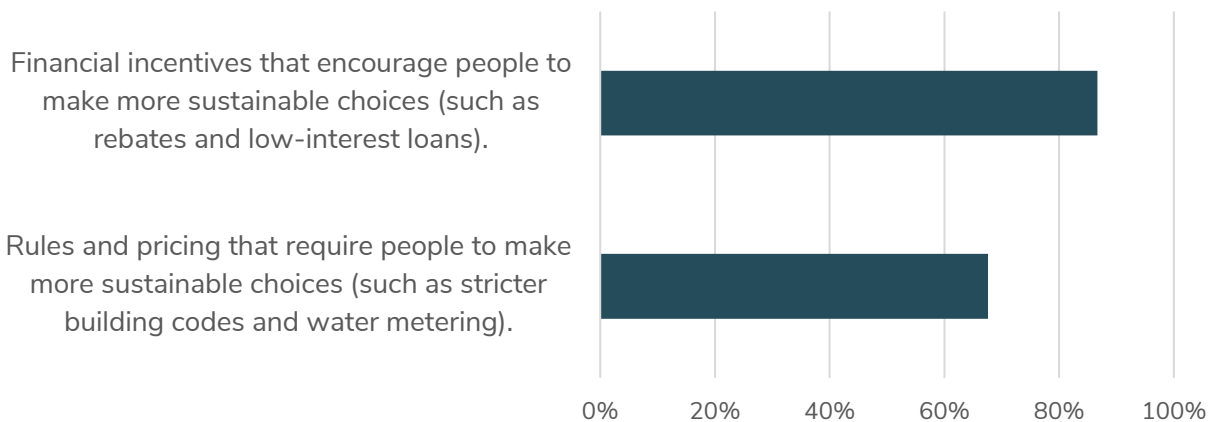
5. Mechanisms for Action

The ways to achieve action on climate change, energy and green economy can be broadly categorized into two groups:

- Financial incentives (such as rebates and low-interest loans) that make it financially easier and more affordable for individuals, businesses, and others to make more sustainable choices.
- Rules and pricing (which can also be referred to as financial disincentives) that require people to make more sustainable choices such as stricter building codes and water metering.

The survey data in the chart below demonstrate that 87 per cent of respondents are supportive or extremely supportive of financial incentives, while close to 70 per cent of respondents support rules and pricing.

How supportive are you of each type of policy tool?



5.1 Financial Incentives

Many participants spoke in favour of incentives to encourage desirable actions such as buying local, installing renewable power systems, improving energy efficiency, and using active or public transit.



“Financial barriers are the largest challenge to individual everyday efforts to increase personal energy efficiency.”

- Survey Participant

Specific financial incentives suggested or requested by participants include:

- Infrastructure funding;
- Funding for feasibility studies, consultants, and capacity building;
- Loans for renewable power generation systems and energy efficiency improvements, including easy-access and low-interest loans;
- “Pay-as-you-save” programs, where the upfront capital for home retrofit, renewable power generation systems or energy efficiency improvements is provided by utilities or the government and paid back through utility bills or taxes (similar to the rural electrification program); and
- Tax credits for the purchase of electric vehicles and the installation of solar systems.

Many participants noted the importance of considering those with low incomes, suggesting that incentives often favour those who have financial resources and penalize those with lower incomes.

A handful of participants called for approaches that support low-income earners such as grants and low-income supplements. Others were concerned that such programs could dis-incentivize work or dis-incentivize higher income earners from taking the desired actions in response to climate change.

In addition to calling for more financial incentives to encourage desired behaviours, a handful of participants called for elimination of current electricity and fossil fuel subsidies that encourage undesirable behaviours.

“Stop working to artificially lower the cost of electricity to protect low-income.”

- Survey Participant

5.2 Rules and Pricing

Participants called for a variety of forms of rules and pricing that require desired behaviours or discourage undesired behaviours. A few participants spoke out against taxes generally. A couple of participants suggested that rules and regulations can interfere with innovation.

Specific input around rules and pricing included:

- Several participants called for legislation and regulations to protect the environment, and to enable green/renewable living;
- A few participants called for additional energy regulations, noting that while electricity is regulated, other forms of energy, such as heating, are not;
- Several participants called for time-of-use pricing for electricity;
- Several participants called for municipal bylaws or zoning that would encourage communities to be designed in efficient, environmentally-conscious ways;
- Several participants spoke in favour of taxing consumption and waste, with specific suggestions to charge higher taxes for vehicles that do not meet mileage targets, for vehicles used for recreational purposes, for homes that do not meet energy efficiency targets and for products designed for short lifespans. A general consumption tax was also suggested; and
- Several participants suggested fee increases in a variety of areas including more surcharges to fund recycling, an annual surcharge on all recreational vehicles, and an increase in vehicle registration fees depending on engine size.

“Please stop avoiding taxes like they're evil. If you're using a tax to make a public investment and it's clearly to everyone's benefit, try proposing it and see what people say. Make it progressive so it falls on Yukoners who have financial surpluses. I'm one. Tax me.”

- Survey Participant

6 Feedback on the Engagement Process

Many participants were pleased with the engagement process and felt that the conversations were valuable. While some participants came to the public engagement sessions looking for more information about climate change and on possible actions, the sessions were designed to learn and gather ideas from the participants. A handful of participants felt that additional discussions are needed while a handful more expressed frustration at too much talk and not enough action. A few participants expressed disappointment that there were not more people participating in the engagement process. A handful of participants felt the survey needed improvements, suggesting that the questions were leading or misleading, contained complex terminology or were difficult to answer.



Next Steps

Now that the first phase of the public engagement is complete, the Government of Yukon is working with Indigenous and municipal partners to develop a draft version of the climate change, energy and green economy strategy.

We are using the input received from the public engagement, as well as the findings from research efforts that are helping us better understand the current challenges and opportunities related to addressing climate change, meeting our energy needs and building a green economy.

When the draft strategy is complete, we will release it for public review, anticipated to take place in fall 2019.

After this phase of public engagement, we will analyze the input received and work with our partners to make any necessary changes.

A recommended strategy will be submitted to the Government of Yukon for review and approval. The implementation of the strategy's actions and commitments will follow in the years to come.



Acknowledgements

The Government of Yukon team working on this initiative would like to thank all of the representatives from participating municipal and Indigenous governments and organizations that helped us plan and deliver the public engagement activities. We could not have delivered this public engagement without your local knowledge and expertise. In particular, we would like to thank the City of Dawson for running the public meeting in Dawson when our flight from Whitehorse was grounded and the Acho Dene Koe First Nation for coordinating an event in Fort Liard in the Northwest Territories.

Another thank you goes out to Michael Pealow for his excellent work facilitating many of the public meetings and compiling the thousands of comments received. We also would like to thank John Glynn-Morris and Dennis Zimmermann for contributing their expertise to some of the public meetings.



Appendices

Appendix A - Public Engagement Survey



This survey assesses your level of interest in various types of ideas that could be part of a new climate change, energy and green economy strategy. The ideas presented in this survey are not exhaustive, and other ideas suggested by the public and experts could be included in the draft strategy.

The data from this survey are collected by the Yukon Bureau of Statistics in accordance with the Statistics Act. Your participation in this survey is voluntary and your responses will be kept confidential. All responses will be combined for reporting purposes.

Section 1: Issues

We want to make sure the new integrated strategy on climate change, energy and green economy reflects the needs and challenges faced by Yukoners in their day-to-day lives. The following questions ask you to think about issues in your life that the new strategy could address.

When you think about climate change, energy and green economy, what issues or problems are you facing?

<input type="checkbox"/>	My cost of living is too high to have choices in how I spend money.
<input type="checkbox"/>	I am experiencing negative impacts from climate change.
<input type="checkbox"/>	I do not have enough money to make my home more energy efficient.
<input type="checkbox"/>	I do not have access to reliable electricity and heat.
<input type="checkbox"/>	It is not possible for me to take public transit or use other more sustainable forms of transportation.
<input type="checkbox"/>	There are not enough jobs in my community.
<input type="checkbox"/>	I want to make changes but there are few options available for me to shift to a greener lifestyle.

What other issues or problems are you facing when it comes to climate change, energy and green economy?

Section 2: Ideas

There are many ways to meet our energy needs, reduce greenhouse gas emissions, respond to and prepare for the impacts of climate change, and grow a green economy. The following questions ask you to think about the types of initiatives that you would like to see included in the new strategy.

When considering actions that could be taken to address climate change, meet energy needs, and grow a green economy, how important are the following factors to you?

	Not at all important 1	2	Neutral 3	4	Extremely important 5	Don't know
Reducing greenhouse gas emissions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Environmental impacts like air pollution or habitat loss.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Creating economic opportunities for Yukoners.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
The impact on my day-to-day cost of living.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensuring I have reliable access to energy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Supporting traditional and cultural practices.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

The rest of this section asks you about possible initiatives in several different areas.

- How we use energy and other resources like water and materials.
- Our transportation systems and how we get from point A to point B.
- Ways of building a green economy in Yukon.
- The impacts of climate change like forest fires and permafrost thaw.

How we use energy and other resources

How important is it to you that the new strategy focus on the following types of initiatives related to energy and resource use in Yukon?

	Not at all important 1	2	Neutral 3	4	Extremely important 5	Don't know
Develop larger renewable energy projects like wind farms and biomass district heating systems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the number of small, home-based renewable energy systems like rooftop solar.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce energy use (such as by turning down the heat and turning off the lights).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Make homes more energy efficient (such as by adding insulation and installing more efficient heating systems).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Switch homes to sustainable heating sources like wood or hydroelectricity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase reuse, recycling and composting.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Use water more efficiently (such as by installing tap aerators).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Our transportation systems

How important is it to you that the new strategy focus on the following types of initiatives related to transportation in Yukon?



	Not at all important 1	2	Neutral 3	4	Extremely important 5	Don't know
Increase the use of electric vehicles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the use of hybrid vehicles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the use of alternate transportation fuels like biofuels.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase the use of fuel efficient vehicles.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce the amount of time vehicles are running (such as through efficient trip planning and less idling).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase public transport systems in Yukon communities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase public transport systems between Yukon communities.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase carpooling or ride sharing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Increase walking, cycling and other forms of active transportation (such as through investments in infrastructure).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Building a green economy

How important is it to you that the new strategy focus on the following types of initiatives related to building a green economy in Yukon?

	Not at all important 1	2	Neutral 3	4	Extremely important 5	Don't know
Support local innovation in clean technologies to address climate change and energy needs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Encourage Yukon businesses to change their practices to adapt to the impacts of climate change.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Encourage Yukon businesses to change their practices to reduce their energy use.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide local training to develop the skills and expertise needed in a green economy.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Produce and consume more local food and other products.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

	Not at all important 1	2	Neutral 3	4	Extremely important 5	Don't know
Encourage alternative business models that pursue economic, environmental and social goals (such as cooperatives, the sharing economy, and social enterprises).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Support green economy businesses and initiatives that may not qualify for conventional loans or funding.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Impacts of climate change

We are already experiencing significant changes to our climate, and changes will continue. To face these ongoing changes, Yukon can adapt to the impacts we are already experiencing and plan responses to the changes that are coming. The following questions ask you to think about the impacts of climate change that you would like to see addressed in the new strategy and to think about the types of initiatives that could address those impacts and risks.

How concerned are you about the following impacts of climate change on your community? This question focuses on the impacts of climate change on land and resources. For impacts on people, please see the next question.

	Not at all concerned 1	2	Neutral 3	4	Extremely concerned 5	Don't know
Forest fires.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Floods.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Impacts on air quality.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Impacts on water quality and/or quantity.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Impacts on fish.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Impacts on wildlife.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Impacts on plants and trees.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Impacts on rivers and lakes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Invasive species.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Changing rain and snowfall amounts and patterns.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Changing winter temperatures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Changing summer temperatures.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Thawing permafrost.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How concerned are you about the following impacts of climate change on your community? This question focuses on the impacts of climate change on people. For impacts on land and resources, please see the previous question.

	Not at all concerned 1	2	Neutral 3	4	Extremely concerned 5	Don't know
Shifting roads and buildings.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Disasters and emergencies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Impacts on underground infrastructure (e.g., storm sewers).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Impacts on above-ground infrastructure (e.g., transmission lines).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Impacts on Indigenous culture and traditions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Impacts on other culture and traditions.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability to travel and be on the land.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Impacts on outdoor recreation.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Impacts on mental health and wellbeing.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ability to harvest traditional foods.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Physical health and disease.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Food security.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

What other impacts of climate change in Yukon are you concerned about?

How important is it to you that the new strategy focus on the following types of initiatives related to climate change impacts and risks in Yukon?



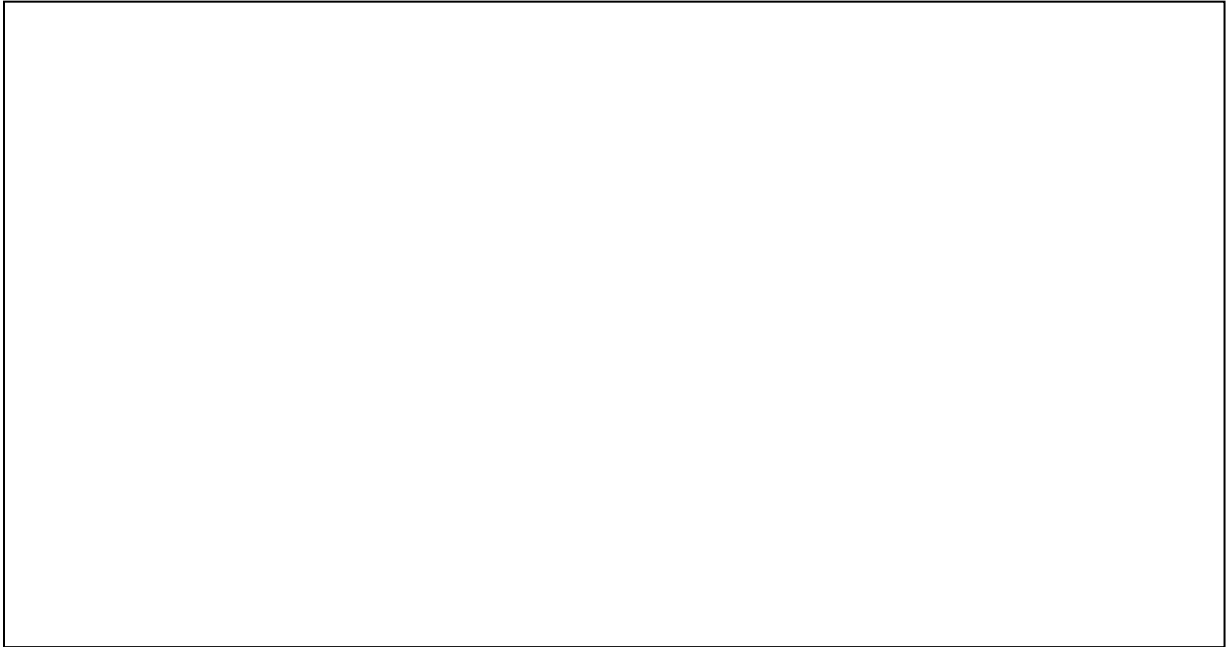
	Not at all important 1	2	Neutral 3	4	Extremely important 5	Don't know
Enhance community-based monitoring programs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Ensure infrastructure is built to withstand permafrost and precipitation changes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Reduce forest fuel around communities (such as through programs like FireSmart).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Promote safety and traditional knowledge through land-based programs.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Enhance emergency preparedness.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Promote research to better understand climate impacts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Develop weather and hazard warning systems.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Promote access to traditional food and local food production.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Provide resources that build local capacity to respond to impacts.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

General questions

When considering policy tools to encourage people to take action on climate change, energy and green economy, on one end of the spectrum is a “rules-based” approach and on the other end is an “incentives-based approach.” How supportive are you of each type of policy tool?

	Not at all supportive 1	2	Neutral 3	4	Extremely supportive 5	Don't know
Rules and pricing that require people to make more sustainable choices (such as stricter building codes and water metering).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Financial incentives that encourage people to make more sustainable choices (such as rebates and low-interest loans).	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please tell us what other types of initiatives you would like to see included in the new strategy on climate change, energy and green economy.



Section 3: Wrap-Up

The following questions will help us understand how Yukoners' needs and priorities on climate change, energy and green economy may vary between communities and individuals.

1. Which community do you live in?

<input checked="" type="checkbox"/>	Beaver Creek	<input type="checkbox"/>	Ibex Valley	<input type="checkbox"/>	Teslin
<input type="checkbox"/>	Burwash Landing	<input type="checkbox"/>	Marsh Lake	<input type="checkbox"/>	Watson Lake
<input type="checkbox"/>	Carcross	<input type="checkbox"/>	Mayo	<input type="checkbox"/>	Whitehorse
<input type="checkbox"/>	Carmacks	<input type="checkbox"/>	Mount Lorne	<input type="checkbox"/>	Not a resident of Yukon
<input type="checkbox"/>	Dawson City	<input type="checkbox"/>	Old Crow	<input type="checkbox"/>	Prefer not to say
<input type="checkbox"/>	Destruction Bay	<input type="checkbox"/>	Pelly Crossing	<input type="checkbox"/>	Other:
<input type="checkbox"/>	Faro	<input type="checkbox"/>	Ross River		
<input type="checkbox"/>	Haines Junction	<input type="checkbox"/>	Tagish		



Do you identify as a member of a Yukon or transboundary First Nation or a transboundary Indigenous group?

- Yes No Prefer not to say

What is your age range?

- | | | | |
|--------------------------|----------|--------------------------|-------------------|
| <input type="checkbox"/> | under 15 | <input type="checkbox"/> | 56 to 75 |
| <input type="checkbox"/> | 16 to 35 | <input type="checkbox"/> | 76 or over |
| <input type="checkbox"/> | 36 to 55 | <input type="checkbox"/> | Prefer not to say |

If you would like us to send you a copy of the ‘what we heard’ report on the public engagement, please provide your email address below. The what we heard document will also be available online at EngageYukon.ca

Thank you for sharing your concerns and ideas. Your input will be used along with expert knowledge to develop a draft version of the climate change, energy and green economy strategy.



Appendix B – Quantitative Survey Results



When you think about climate change, energy and green economy, what issues or problems are you facing?

	Frequency	Percent
My cost of living is too high to have choices in how I spend money.	148	31%
I am experiencing negative impacts from climate change.	184	38%
I do not have enough money to make my home more energy efficient.	159	33%
I do not have access to reliable electricity and heat.	34	7%
It is not possible for me to take public transit or use other more sustainable forms of transportation.	211	44%
There are not enough jobs in my community.	62	13%
I want to make changes but there are few options available for me to shift to a greener lifestyle.	197	41%
None of the above	55	11%

When considering actions that could be taken to address climate change, meet energy needs, and grow a green economy, how important are the following factors to you?

Reducing greenhouse gas emissions.	Frequency	Percent
1 - Not at all important	25	5.2%
2	13	2.7%
3 - Neutral	48	10.0%
4	86	17.9%
5 - Extremely important	302	62.8%
Don't know	7	1.5%
Grand Total	481	100.0%

Environmental impacts like air pollution or habitat loss.	Frequency	Percent
1 - Not at all important	8	1.7%
2	10	2.1%
3 - Neutral	31	6.4%
4	89	18.5%
5 - Extremely important	339	70.5%
Don't know	4	0.8%
Grand Total	481	100.0%

Creating economic opportunities for Yukoners.	Frequency	Percent
1 - Not at all important	10	2.1%
2	14	2.9%
3 - Neutral	121	25.2%
4	153	31.8%
5 - Extremely important	179	37.2%
Don't know	4	0.8%
Grand Total	481	100.0%

The impact on my day-to-day cost of living.	Frequency	Percent
1 - Not at all important	15	3.1%
2	36	7.5%
3 - Neutral	146	30.4%
4	112	23.3%
5 - Extremely important	167	34.7%
Don't know	5	1.0%
Grand Total	481	100.0%

Ensuring I have reliable access to energy.	Frequency	Percent
1 - Not at all important	3	0.6%
2	9	1.9%
3 - Neutral	62	12.9%
4	148	30.8%
5 - Extremely important	251	52.2%
Don't know	8	1.7%
Grand Total	481	100.0%

Supporting traditional and cultural practices.	Frequency	Percent
1 - Not at all important	57	11.9%
2	24	5.0%
3 - Neutral	100	20.8%
4	110	22.9%
5 - Extremely important	177	36.8%
Don't know	13	2.7%
Grand Total	481	100.0%

The rest of this section asks you about possible climate change, energy and green economy initiatives in several different areas. Please let us know which areas you would like to share your thoughts on:

	Frequency	Percent
How we use energy and other resources like water and materials.	363	75.5%
Our transportation systems and how we get from point A to point B.	334	69.4%
Ways of building a green economy in Yukon.	359	74.6%
The impacts of climate change like forest fires and permafrost thaw.	345	71.7%
None of the above	25	5.2%

How important is it to you that the new strategy focus on the following types of initiatives related to energy and resource use in Yukon?

Develop larger renewable energy projects like wind farms and biomass district heating systems.	Frequency	Percent
1 - Not at all important	17	4.7%
2	6	1.7%
3 - Neutral	33	9.1%
4	99	27.3%
5 - Extremely important	199	54.8%
Don't know	9	2.5%
Grand Total	363	100.0%

Increase the number of small, home-based renewable energy systems like rooftop solar.	Frequency	Percent
1 - Not at all important	12	3.3%
2	5	1.4%
3 - Neutral	35	9.6%
4	96	26.4%
5 - Extremely important	209	57.6%
Don't know	6	1.7%
Grand Total	363	100.0%

Reduce energy use (such as by turning down the heat and turning off the lights).	Frequency	Percent
1 - Not at all important	11	3.0%
2	10	2.8%
3 - Neutral	58	16.0%
4	88	24.2%
5 - Extremely important	195	53.7%
Don't know	1	0.3%
Grand Total	363	100.0%

Make homes more energy efficient (such as by adding insulation and installing more efficient heating systems).	Frequency	Percent
1 - Not at all important	2	0.6%
2	7	1.9%
3 - Neutral	16	4.4%
4	91	25.1%
5 - Extremely important	244	67.2%
Don't know	3	0.8%
Grand Total	363	100.0%

Switch homes to sustainable heating sources like wood or hydroelectricity.	Frequency	Percent
1 - Not at all important	3	0.8%
2	5	1.4%
3 - Neutral	59	16.3%
4	110	30.3%
5 - Extremely important	178	49.0%
Don't know	8	2.2%
Grand Total	363	100.0%

Increase reuse, recycling and composting.	Frequency	Percent
1 - Not at all important	10	2.8%
2	8	2.2%
3 - Neutral	28	7.7%
4	78	21.5%
5 - Extremely important	237	65.3%
Don't know	2	0.6%
Grand Total	363	100.0%

Use water more efficiently (such as by installing tap aerators).	Frequency	Percent
1 - Not at all important	20	5.5%
2	28	7.7%
3 - Neutral	71	19.6%
4	90	24.8%
5 - Extremely important	145	39.9%
Don't know	9	2.5%
Grand Total	363	100.0%

How important is it to you that the new strategy focus on the following types of initiatives related to transportation in Yukon?

Increase the use of electric vehicles.	Frequency	Percent
1 - Not at all important	45	13.5%
2	18	5.4%
3 - Neutral	64	19.2%
4	77	23.1%
5 - Extremely important	117	35.0%
Don't know	13	3.9%
Grand Total	334	100.0%

Increase the use of hybrid vehicles.	Frequency	Percent
1 - Not at all important	27	8.1%
2	18	5.4%
3 - Neutral	79	23.7%
4	98	29.3%
5 - Extremely important	99	29.6%
Don't know	13	3.9%
Grand Total	334	100.0%

Increase the use of alternate transportation fuels like biofuels.	Frequency	Percent
1 - Not at all important	39	11.7%
2	24	7.2%
3 - Neutral	93	27.8%
4	74	22.2%
5 - Extremely important	84	25.1%
Don't know	20	6.0%
Grand Total	334	100.0%

Increase the use of fuel efficient vehicles.	Frequency	Percent
1 - Not at all important	9	2.7%
2	12	3.6%
3 - Neutral	48	14.4%
4	94	28.1%
5 - Extremely important	168	50.3%
Don't know	3	0.9%
Grand Total	334	100.0%

Reduce the amount of time vehicles are running (such as through efficient trip planning and less idling).	Frequency	Percent
1 - Not at all important	31	9.3%
2	16	4.8%
3 - Neutral	42	12.6%
4	99	29.6%
5 - Extremely important	145	43.4%
Don't know	1	0.3%
Grand Total	334	100.0%

Increase public transport systems in Yukon communities.	Frequency	Percent
1 - Not at all important	17	5.1%
2	15	4.5%
3 - Neutral	54	16.2%
4	78	23.4%
5 - Extremely important	162	48.5%
Don't know	8	2.4%
Grand Total	334	100.0%

Increase public transport systems between Yukon communities.	Frequency	Percent
1 - Not at all important	14	4.2%
2	20	6.0%
3 - Neutral	56	16.8%
4	87	26.0%
5 - Extremely important	149	44.6%
Don't know	8	2.4%
Grand Total	334	100.0%

Increase carpooling or ride sharing.	Frequency	Percent
1 - Not at all important	24	7.2%
2	21	6.3%
3 - Neutral	80	24.0%
4	107	32.0%
5 - Extremely important	99	29.6%
Don't know	3	0.9%
Grand Total	334	100.0%

Increase walking, cycling and other forms of active transportation (such as through investments in infrastructure).	Frequency	Percent
1 - Not at all important	16	4.8%
2	10	3.0%
3 - Neutral	31	9.3%
4	67	20.1%
5 - Extremely important	208	62.3%
Don't know	2	0.6%
Grand Total	334	100.0%

How important is it to you that the new strategy focus on the following types of initiatives related to building a green economy in Yukon?

Support local innovation in clean technologies to address climate change and energy needs.	Frequency	Percent
1 - Not at all important	8	2.2%
2	7	1.9%
3 - Neutral	32	8.9%
4	108	30.1%
5 - Extremely important	202	56.3%
Don't know	2	0.6%
Grand Total	359	100.0%

Encourage Yukon businesses to change their practices to adapt to the impacts of climate change.	Frequency	Percent
1 - Not at all important	14	3.9%
2	3	0.8%
3 - Neutral	38	10.6%
4	114	31.8%
5 - Extremely important	185	51.5%
Don't know	5	1.4%
Grand Total	359	100.0%

Encourage Yukon businesses to change their practices to reduce their energy use.	Frequency	Percent
1 - Not at all important	7	1.9%
2	8	2.2%
3 - Neutral	25	7.0%
4	101	28.1%
5 - Extremely important	214	59.6%
Don't know	4	1.1%
Grand Total	359	100.0%

Provide local training to develop the skills and expertise needed in a green economy.	Frequency	Percent
1 - Not at all important	6	1.7%
2	7	1.9%
3 - Neutral	29	8.1%
4	101	28.1%
5 - Extremely important	212	59.1%
Don't know	4	1.1%
Grand Total	359	100.0%

Produce and consume more local food and other products.	Frequency	Percent
1 - Not at all important	5	1.4%
2	7	1.9%
3 - Neutral	31	8.6%
4	67	18.7%
5 - Extremely important	248	69.1%
Don't know	1	0.3%
Grand Total	359	100.0%

Encourage alternative business models that pursue economic, environmental and social goals (such as cooperatives, the sharing economy, and social enterprises).	Frequency	Percent
1 - Not at all important	17	4.7%
2	9	2.5%
3 - Neutral	55	15.3%
4	96	26.7%
5 - Extremely important	173	48.2%
Don't know	9	2.5%
Grand Total	359	100.0%

Support green economy businesses and initiatives that may not qualify for conventional loans or funding.	Frequency	Percent
1 - Not at all important	12	3.3%
2	13	3.6%
3 - Neutral	38	10.6%
4	103	28.7%
5 - Extremely important	180	50.1%
Don't know	13	3.6%
Grand Total	359	100.0%

How concerned are you about the following impacts of climate change on your community? (land and resources)

Forest fires.	Frequency	Percent
1 - Not at all	10	2.9%
2	1	0.3%
3 - Neutral	29	8.4%
4	83	24.1%
5 - Extremely concerned	220	63.8%
Don't know	2	0.6%
Grand Total	345	100.0%

Floods.	Frequency	Percent
1 - Not at all	39	11.3%
2	33	9.6%
3 - Neutral	87	25.2%
4	94	27.2%
5 - Extremely concerned	86	24.9%
Don't know	6	1.7%
Grand Total	345	100.0%

Impacts on air quality.	Frequency	Percent
1 - Not at all	26	7.5%
2	31	9.0%
3 - Neutral	59	17.1%
4	110	31.9%
5 - Extremely concerned	117	33.9%
Don't know	2	0.6%
Grand Total	345	100.0%

Impacts on water quality and/or quantity.	Frequency	Percent
1 - Not at all	15	4.3%
2	19	5.5%
3 - Neutral	35	10.1%
4	90	26.1%
5 - Extremely concerned	185	53.6%
Don't know	1	0.3%
Grand Total	345	100.0%



Impacts on fish.	Frequency	Percent
1 - Not at all	11	3.2%
2	6	1.7%
3 - Neutral	20	5.8%
4	87	25.2%
5 - Extremely concerned	220	63.8%
Don't know	1	0.3%
Grand Total	345	100.0%

Impacts on wildlife.	Frequency	Percent
1 - Not at all	8	2.3%
2	4	1.2%
3 - Neutral	15	4.3%
4	87	25.2%
5 - Extremely concerned	231	67.0%
Grand Total	345	100.0%

Impacts on plants and trees.	Frequency	Percent
1 - Not at all	10	2.9%
2	7	2.0%
3 - Neutral	21	6.1%
4	94	27.2%
5 - Extremely concerned	212	61.4%
Don't know	1	0.3%
Grand Total	345	100.0%

Impacts on rivers and lakes.	Frequency	Percent
1 - Not at all	9	2.6%
2	3	0.9%
3 - Neutral	16	4.6%
4	98	28.4%
5 - Extremely concerned	218	63.2%
Don't know	1	0.3%
Grand Total	345	100.0%

Invasive species.	Frequency	Percent
1 - Not at all	13	3.8%
2	5	1.4%
3 - Neutral	44	12.8%
4	104	30.1%
5 - Extremely concerned	167	48.4%
Don't know	12	3.5%
Grand Total	345	100.0%

Changing rain and snowfall amounts and patterns.	Frequency	Percent
1 - Not at all	14	4.1%
2	6	1.7%
3 - Neutral	44	12.8%
4	97	28.1%
5 - Extremely concerned	179	51.9%
Don't know	5	1.4%
Grand Total	345	100.0%

Changing winter temperatures.	Frequency	Percent
1 - Not at all	16	4.6%
2	6	1.7%
3 - Neutral	50	14.5%
4	95	27.5%
5 - Extremely concerned	176	51.0%
Don't know	2	0.6%
Grand Total	345	100.0%

Changing summer temperatures.	Frequency	Percent
1 - Not at all	14	4.1%
2	13	3.8%
3 - Neutral	65	18.8%
4	112	32.5%
5 - Extremely concerned	139	40.3%
Don't know	2	0.6%
Grand Total	345	100.0%

Thawing permafrost.	Frequency	Percent
1 - Not at all	11	3.2%
2	1	0.3%
3 - Neutral	26	7.5%
4	90	26.1%
5 - Extremely concerned	213	61.7%
Don't know	4	1.2%
Grand Total	345	100.0%

How concerned are you about the following impacts of climate change on your community? (people)



Shifting roads and buildings.	Frequency	Percent
1 - Not at all	11	3.2%
2	10	2.9%
3 - Neutral	77	22.3%
4	135	39.1%
5 - Extremely concerned	106	30.7%
Don't know	6	1.7%
Grand Total	345	100.0%

Disasters and emergencies.	Frequency	Percent
1 - Not at all	11	3.2%
2	14	4.1%
3 - Neutral	39	11.3%
4	121	35.1%
5 - Extremely concerned	156	45.2%
Don't know	4	1.2%
Grand Total	345	100.0%

Impacts on underground infrastructure (e.g., storm sewers).	Frequency	Percent
1 - Not at all	16	4.6%
2	21	6.1%
3 - Neutral	77	22.3%
4	130	37.7%
5 - Extremely concerned	87	25.2%
Don't know	14	4.1%
Grand Total	345	100.0%

Impacts on above-ground infrastructure (e.g., transmission lines).	Frequency	Percent
1 - Not at all	13	3.8%
2	21	6.1%
3 - Neutral	87	25.2%
4	124	35.9%
5 - Extremely concerned	86	24.9%
Don't know	14	4.1%
Grand Total	345	100.0%

Impacts on Indigenous culture and traditions.	Frequency	Percent
1 - Not at all	31	9.0%
2	15	4.3%
3 - Neutral	72	20.9%
4	87	25.2%
5 - Extremely concerned	132	38.3%
Don't know	8	2.3%
Grand Total	345	100.0%

Impacts on other culture and traditions.	Frequency	Percent
1 - Not at all	35	10.1%
2	24	7.0%
3 - Neutral	94	27.2%
4	86	24.9%
5 - Extremely concerned	90	26.1%
Don't know	16	4.6%
Grand Total	345	100.0%

Ability to travel and be on the land.	Frequency	Percent
1 - Not at all	20	5.8%
2	10	2.9%
3 - Neutral	58	16.8%
4	107	31.0%
5 - Extremely concerned	147	42.6%
Don't know	3	0.9%
Grand Total	345	100.0%

Impacts on outdoor recreation.	Frequency	Percent
1 - Not at all	18	5.2%
2	13	3.8%
3 - Neutral	69	20.0%
4	117	33.9%
5 - Extremely concerned	126	36.5%
Don't know	2	0.6%
Grand Total	345	100.0%

Impacts on mental health and wellbeing.	Frequency	Percent
1 - Not at all	18	5.2%
2	13	3.8%
3 - Neutral	48	13.9%
4	95	27.5%
5 - Extremely concerned	166	48.1%
Don't know	5	1.4%
Grand Total	345	100.0%

Ability to harvest traditional foods.	Frequency	Percent
1 - Not at all	26	7.5%
2	17	4.9%
3 - Neutral	55	15.9%
4	90	26.1%
5 - Extremely concerned	153	44.3%
Don't know	4	1.2%
Grand Total	345	100.0%

Physical health and disease.	Frequency	Percent
1 - Not at all	17	4.9%
2	12	3.5%
3 - Neutral	51	14.8%
4	106	30.7%
5 - Extremely concerned	156	45.2%
Don't know	3	0.9%
Grand Total	345	100.0%

Food security.	Frequency	Percent
1 - Not at all	11	3.2%
2	5	1.4%
3 - Neutral	39	11.3%
4	82	23.8%
5 - Extremely concerned	201	58.3%
Don't know	7	2.0%
Grand Total	345	100.0%

How important is it to you that the new strategy focus on the following types of initiatives related to climate change impacts and risks in Yukon?

Enhance community-based monitoring programs.	Frequency	Percent
1 - Not at all important	14	4.1%
2	12	3.5%
3 - Neutral	66	19.1%
4	128	37.1%
5 - Extremely important	111	32.2%
Don't know	14	4.1%
Grand Total	345	100.0%

Ensure infrastructure is built to withstand permafrost and precipitation changes.	Frequency	Percent
1 - Not at all important	7	2.0%
2	2	0.6%
3 - Neutral	29	8.4%
4	106	30.7%
5 - Extremely important	198	57.4%
Don't know	3	0.9%
Grand Total	345	100.0%

Reduce forest fuel around communities (such as through programs like FireSmart).	Frequency	Percent
1 - Not at all important	6	1.7%
2	6	1.7%
3 - Neutral	27	7.8%
4	106	30.7%
5 - Extremely important	194	56.2%
Don't know	6	1.7%
Grand Total	345	100.0%

Promote safety and traditional knowledge through land-based programs.	Frequency	Percent
1 - Not at all important	24	7.0%
2	13	3.8%
3 - Neutral	60	17.4%
4	96	27.8%
5 - Extremely important	144	41.7%
Don't know	8	2.3%
Grand Total	345	100.0%

Enhance emergency preparedness.	Frequency	Percent
1 - Not at all important	9	2.6%
2	9	2.6%
3 - Neutral	32	9.3%
4	115	33.3%
5 - Extremely important	178	51.6%
Don't know	2	0.6%
Grand Total	345	100.0%

Promote research to better understand climate impacts.	Frequency	Percent
1 - Not at all important	10	2.9%
2	12	3.5%
3 - Neutral	38	11.0%
4	98	28.4%
5 - Extremely important	184	53.3%
Don't know	3	0.9%
Grand Total	345	100.0%

Develop weather and hazard warning systems.	Frequency	Percent
1 - Not at all important	15	4.3%
2	8	2.3%
3 - Neutral	57	16.5%
4	119	34.5%
5 - Extremely important	140	40.6%
Don't know	6	1.7%
Grand Total	345	100.0%

Promote access to traditional food and local food production.	Frequency	Percent
1 - Not at all important	11	3.2%
2	8	2.3%
3 - Neutral	43	12.5%
4	92	26.7%
5 - Extremely important	189	54.8%
Don't know	2	0.6%
Grand Total	345	100.0%

Provide resources that build local capacity to respond to impacts.	Frequency	Percent
1 - Not at all important	9	2.6%
2	6	1.7%
3 - Neutral	34	9.9%
4	114	33.0%
5 - Extremely important	175	50.7%
Don't know	7	2.0%
Grand Total	345	100.0%

How supportive are you of each type of policy tool?

Rules and pricing that require people to make more sustainable choices (such as stricter building codes and water metering).	Frequency	Percent
1 - Not at all supportive	49	10.2%
2	23	4.8%
3 - Neutral	71	14.8%
4	114	23.7%
5 - Extremely supportive	211	43.9%
Don't know	13	2.7%
Grand Total	481	100.0%

Financial incentives that encourage people to make more sustainable choices (such as rebates and low-interest loans).	Frequency	Percent
1 - Not at all supportive	16	3.3%
2	11	2.3%
3 - Neutral	29	6.0%
4	105	21.8%
5 - Extremely supportive	312	64.9%
Don't know	8	1.7%
Grand Total	481	100.0%

Demographic Information

Which community do you live in?	Frequency	Percent
Whitehorse	288	59.9%
Dawson City	39	8.1%
Haines Junction	23	4.8%
Carmacks	20	4.2%
Mount Lorne	10	2.1%
Old Crow	6	1.2%
Marsh Lake	7	1.5%
Ibex Valley	7	1.5%
Carcross	5	1.0%
Destruction Bay	5	1.0%
Other Yukon Communities	31	6.4%
Outside Yukon	16	3.3%
Prefer not to say	24	5.0%
Grand Total	481	100.0%

Do you identify as a member of a Yukon First Nation or a transboundary Indigenous group?	Frequency	Percent
Yes	60	12.5%
No	366	76.1%
Prefer not to say	55	11.4%
Grand Total	481	100.0%

What is your age range?	Frequency	Percent
0 to 35	135	28.1%
36 to 55	200	41.6%
56 to 75	111	23.1%
76 or over	10	2.1%
Prefer not to say	25	5.2%
Grand Total	481	100.0%



Appendix C – Response Letters from Stakeholders*

* This appendix only contains responses from the stakeholder groups that have given permission to include their responses in this document.

Cold Climate Innovation

How can Yukoners create economic benefits by building a green economy?

- The territory imports approximately \$200 million of fossil fuels each year. This represents a huge opportunity for import substitution, economic growth and diversification of the Yukon economy. Any reduction in this bill will generate economic benefits for Yukoners, whether the reduction comes from switching to locally sourced renewables (biomass, solar, hydro), or reducing energy consumption.
- Opportunities could emerge (or be created) in improving the overall efficiency of the vehicle fleet in the Yukon.
 - Replacement of inefficient gasoline and diesel fueled vehicles with more efficient gasoline and diesel vehicles.
 - Replacement of gasoline and diesel fueled vehicles with EV's

Are there areas where Yukon businesses or entrepreneurs have a competitive advantage?

- The nature of the supply chain for biomass energy favours businesses close to the consumer, so if biomass is more widely adopted for heating in the territory it is inevitable that new and existing Yukon based businesses will have a competitive advantage over businesses based outside.
- Local production of food. Currently local food producers are not in a position to compete with imported food prices (except for a very small number of products). With enough encouragement and eventual development of economies of scale this situation could be reversed, allowing local producers to develop a competitive advantage due to proximity to consumers.

How might Yukon businesses and industries be affected by actions to reduce greenhouse gas emissions and move toward more sustainable energy?

Are there any positive impacts? How could those be maximized?

- Actions which enable businesses to reduce GHG emissions through improved energy efficiency can reduce their energy bills.

Are there any negative impacts? How could those be minimized?

- Any increase in the cost of energy will obviously have negative impacts in the short term.

Aletta Leitch
Senior Project Manager, Climate Change Secretariat
Government of Yukon
Box 2703 (V-205) Whitehorse, Yukon Y1A 2C6



December 17th, 2018

CPAWS Yukon's comments on the Climate Change, Energy and Green Economy Strategy.

CPAWS Yukon appreciates the opportunity to offer input on the Yukon's Climate Change, Energy and Green Economy Strategy. Tackling climate change is a defining challenge of our time. According to the Intergovernmental Panel on Climate Change, the world must take ambitious action to limit global temperature rise to 1.5 degrees Celsius. Global emissions must decline by around 45% from 2010 levels by 2030 and reach net zero by 2050.¹ The Yukon should not use its small population and relatively small contribution to overall greenhouse gas emissions on a national level as an excuse for not taking bold action. Instead the Yukon should strive to be a leader, and set an example for Canada and the world that ambitious climate action is possible.

The Climate Change, Energy and Green Economy strategy should recognize the importance of protected areas in any effective plan to take on climate change. Boreal ecosystems store immense amounts of carbon, and protecting these lands will help ensure sequestered carbon stays out of the atmosphere. Protected areas are also critical to ecological resilience and biodiversity protection in the face of climate change. Wild places must remain intact to allow species to shift their ranges to keep pace with changing climate patterns, and ecosystems that act as "climate refugia" must be identified and protected.

We applaud the Government of Yukon for the steps taken so far, such as placing a moratorium on fracking and working to implement a carbon tax. We support the Minister of Energy, Mines and Resources' mandate to "increase the availability of renewable energy solutions, while reducing the reliance on non-renewable sources and lessening energy consumption."² CPAWS Yukon hopes that the Climate Change, Energy and Green Economy Strategy will be the blueprint for the Yukon's transition to a low-carbon economy.

¹ Rogelj, J., Shindell, D., Jiang, K., Fifita, S., Forster, P., Ginzburg, V., ... & Mundaca, L. (2018). Mitigation pathways compatible with 1.5° C in the context of sustainable development. Intergovernmental Panel on Climate Change.

² Office of the Premier (6 January, 2017). Minister Ranj Pillai's mandate letter. Retrieved from: Minister Ranj Pillai's mandate letter

CPAWS Yukon is pleased to provide the following ten recommendations, and wholeheartedly supports the comprehensive recommendations provided by the Yukon Conservation Society.

1. **Protected areas should be part of the Yukon’s climate change mitigation strategy.**

The forests and peatlands of Canada’s boreal ecosystem hold over 200 billion tonnes of carbon: equivalent to 26 years of global carbon emissions at 2006 levels.³ It is critical to leave these ecosystems intact and ensure that sequestered carbon remains secured.

Safeguarding carbon sinks is among the many reasons for having strong networks of protected areas in the Yukon.

2. **The Yukon should integrate climate change resiliency into its land use planning and protected areas strategies.**

For example, the Yukon should enact strong protections for “climate refugia” in the territory — environments where climates are projected to remain relatively stable, and which may be critical to biodiversity protection. The Boreal Songbird Initiative has analyzed climate change impacts on birds across North America’s boreal forest, and identified regions of the Yukon that may provide critical climate refugium for numerous bird species.⁴ The Yukon should also ensure that connectivity between Yukon ecosystems is protected, to maximize the capacity of species to shift their ranges to adapt to changing climates.

3. **The Yukon should adopt science-based emissions reduction targets.**

The Yukon should reduce its emissions by 45% from 2010 levels by 2030, and achieve carbon neutrality by 2050, in line with the global reductions necessary to limit global mean temperature rise to 1.5 degrees Celsius.⁵

4. **Fossil fuels should remain in the ground.**

The Yukon should place a permanent ban on fracking and place a moratorium on the leasing of new fossil fuel reserves within the territory. In order to prevent a global mean temperature rise in excess of 2 degrees Celsius, approximately two thirds of known fossil fuel reserves must remain unburned, including all Arctic reserves.⁶ An even greater proportion of reserves must remain in the ground in order to achieve a 1.5 degree target.

³ Carlson, M., Wells, J., & Roberts, D. (2009). *The carbon the world forgot: conserving the capacity of Canada's Boreal Forest region to mitigate and adapt to climate change*. Boreal Songbird Initiative and Canadian Boreal Initiative, Seattle, WE, USA and Ottawa, Canada.

⁴ Boreal Songbird Initiative (2018). Boreal forest refuge: Conserving North America’s bird nursery in the face of climate change. Retrieved from: https://www.borealbirds.org/sites/default/files/publications/Report-Birds-Climate-Change-Web-Res_1.pdf

⁵ Rogelj, J., Shindell, D., Jiang, K., Fifita, S., Forster, P., Ginzburg, V., ... & Mundaca, L. (2018). Mitigation pathways compatible with 1.5° C in the context of sustainable development. Intergovernmental Panel on Climate Change.

⁶ McGlade, C., & Ekins, P. (2015). The geographical distribution of fossil fuels unused when limiting global warming to 2 C. *Nature*, 517(7533), 187.

5. **The Yukon should rule out connecting to the British Columbia grid.** Constructing a transmission line into BC could cost 1.7 billion dollars⁷, while eventually providing power at a price that would undercut smaller scale renewable energy generation in the territory.
6. **The Yukon should invest in clean energy infrastructure and innovation.** The Government of Yukon should invest in energy solutions that respect Indigenous self-determination, enhance the Yukon's energy resiliency, and move the territory beyond fossil fuels.
7. **The Yukon should support communities in transition from diesel to more sustainable forms of energy.** We applaud the Yukon Government in its support of Old Crow's solar energy initiative, and urge the Yukon to support similar partnerships throughout the territory.
8. **The Yukon's climate change strategy should engage all sectors of the Yukon's economy.** The Government of Yukon should avoid offering exemptions from its climate change policies or regulations to select industries. Requiring that all sectors pull their weight would ensure fairness, and avoid setting precedents for other sectors to request exemptions.
9. **The Yukon should support Indigenous leadership on climate change.** The Yukon should continue to support groups such as the Arctic Institute for Community Based Research that work to understand the impacts of climate change on Indigenous communities and empower new generations of community leaders.
10. **The Yukon should work with communities to improve public transit.** The Government of Yukon should work with First Nations, municipalities and the federal government to ensure Yukoners have access to affordable and convenient public transit options. The Yukon should also study possibilities for public transit options between communities.

Malkolm Boothroyd
Campaigns Coordinator
Canadian Parks and Wilderness Society, Yukon Chapter

⁷ Midguard Consulting Inc. (2015). Yukon – Transmission Market Benefits Assessment. Retrieved from: http://nextgenerationhydro.ca/files/uploads/2014/11/NGH_-Transmission-Value-Assessment-R32.pdf

**Firesmart Whitehorse
c/o Stuart Clark
135 Falcon Drive
Whitehorse, YK Y1A 6G7**

15 December 2018

**Aletta Leitch
Senior Project Manager, Climate Change Secretariat
Government of Yukon
Box 2703 (V-205) Whitehorse, Yukon Y1A 2C6**

Firesmart Whitehorse Input to Climate Change, Energy and Green Economy Policy Process

Firesmart Whitehorse is an informal grouping of retired foresters, engineers, biologist and veteran elected officials dedicated to reducing the risk of loss of life and property from a major interface fire in Whitehorse. As all three themes of this policy process are affected by our work, we wish to provide the following input.

FIRE RISK REDUCTION

Past efforts to avoid forest fires in the Whitehorse area, together with residential expansion into the forest within the municipal boundaries, have resulted in heavy fuel loads (wood) in proximity to the built-up portions of city land. This is extremely dangerous as seen most recently in California and earlier in BC and Alberta. Climate change including increased average temperatures, lower humidity and windier conditions will aggravate this problem.

The only way to remedy this situation is to strategically remove trees, particularly pine and spruce, in areas likely to allow a forest fire to burn its way into and within residential areas. By one estimate, the amounts of wood that must be removed in the Whitehorse area could amount to 350,000 cords, with another 38,000 tons of slash which can be converted to woodchips. Some of this biomass could be used as lumber, but much that will need to be burned, potentially either as firewood, pellets, or as fuel for woodchip boilers for heating large buildings.

This is an urgent public safety priority which links to a further aspect of this policy process.

BIOMASS ENERGY UTILIZATION

The requirement to remove biomass to reduce the risk of wildfire can link positively to the need to increase the availability of energy in the Yukon, particularly energy reliably available in the winter months. While biomass can be used to generate electricity, its use as a source of space heating is simpler and more easily deployed. Space heating consumes about 25% of the Yukon's energy supply, only 20% of which is currently supplied by biomass energy. The remaining 80% is met by various fossil fuels. There is a major opportunity for increasing the use of biomass energy to meet space heating needs while simultaneously reducing dependence on fossil fuels and creating jobs within the Yukon.

The demand for wood-based biofuels must grow to match this increased supply. Initially, current largely residential cordwood demand in Whitehorse can absorb much of this new supply. However, in the near future, this must be augmented by the demand for wood chips or pellets for high efficiency wood-fired heaters and boilers. Wood chips, at 20% of the cost of equivalent fossil fuels, are a highly attractive fuel for heating existing and new public buildings. The private sector is ready to ensure a reliable local supply of wood chips from the landscape modifications required for fire risk reduction.

REDUCING FIRE IGNITION SOURCES

While much emphasis has been rightly focussed on human-caused fire ignition sources, lightning strikes and sparks from electrical transmission lines are also important sources. Nothing can be done to prevent lightning strikes but ignition from power lines can be reduced by ensuring that power line right-of-ways in vulnerable areas (e.g. within Whitehorse City boundaries) are regularly maintained to avoid the buildup of combustible materials under and adjacent to the powerlines. This has been identified as a source for some of the major fires in California. In addition, new housing developments should use underground electrical distribution to further reduce this risk.

We urge you to consider these proposals and include them in any policies or legislation that comes from this policy process. We are ready to meet with you to discuss these further if needed.

Your sincerely,

A handwritten signature in black ink that reads "C. Stuart Clark". The signature is written in a cursive, flowing style.

Stuart Clark, for Firesmart Whitehorse

David Loeks
Myles Thorp
Sandy Johnston
Mike Gladish
Ione Christianson

cc. Shane Andre, Director, Energy Branch, Department of Energy, Mines, and Resources
Rebecca World, Director, Climate Change Secretariat, Department of Environment
Geoff Woodhouse, Senior Policy Analyst, Department of Economic Development

Comments on the Yukon government discussion document

Climate Change, Energy and Green Economy

from John Maissan

My comments and observations on the discussion document Climate Change, Energy and Green Economy follow the discussion document from front to back for the convenience of the reader.

Page 1 Overview

Second paragraph "... We are ready for an updated, innovative approach to climate change. Energy and green economy. ..." It has been over two years since the present Liberal Yukon Government (YG) was elected. I am disappointed that change has been so slow given the Liberal's election platform. By the time the new strategy is developed and implemented we will fast be approaching the end of this government's mandate.

So far YG has shown little appetite to curb fossil fuel use. It seems to me that our leaders are doing as little as possible, possibly because meaningful action will make some people (electorate) unhappy, but leadership and decisions is what we elect them for. I really hope that the pace of change increases and does not await the completion of this strategy.

I am also concerned that a lot of the discussion document references 2- and 3-year old data when we all know that things will change significantly in 2019 and thereafter. This strategy must be based on what we will experience in future, not what we experienced in the past.

Page 2

Will the "expert knowledge" referenced in the middle of the page include national and international experts?

Page 3

The economic decisions bullet near the top is quite right but we have not seen many (if any) bold decisions by YG to influence our energy usage, more can and should be done.

The last sentence on the page about adapting to the coming changes is important BUT even more important is preventing climate change by reducing our use of fossil fuels. This should be at the top of the list otherwise our mitigation/adaptation costs will continue to grow. We cannot afford to play "chicken" with other jurisdictions and countries.

Page 4

The energy information at the top of the page is already outdated, certainly in the electricity sector. It would be more useful to have figures based on what will be happening in 2019 and thereafter with the Victoria Gold mine active. The fossil fuel used in industrial activities and in power generation will be increased significantly. The "expert knowledge" referenced on page 2 should be used here.

The information at the bottom of the page is based on 2015 data. Again, projected information for 2019 and thereafter with Victoria Gold in production would be much more helpful to have rather than data for 2015 when Yukon was in a minor recession.

Page 5

Top of the page – see the final comment on page 4 directly above.

The discussion below Figure 2 is of significant concern to me. The terms “cost-effective” and “affordable” are so subjective as to be meaningless. They can and have been used as an excuse to use more polluting options simply because they are less expensive (for example LNG power generation) rather than investing in renewable non-polluting energy sources. From what I have heard the YG IPP policy standing offer program will be no different. Why does YG believe that non-polluting renewable resources must be lower cost than polluting fossil fuels? For the sake of future generations we simply cannot afford NOT to go renewable.

Page 6

Top of the page is outdated information – project to 2019 and thereafter with Victoria Gold please!

There is a significant omission from the blue text box. That omission is Community Economic Activity; in the generation of clean renewable electricity for example, or biomass heat to displace fossil fuels. The YG should dump the idea of connecting to the BC power grid and instead spend that billion plus dollars developing local renewable energy for electricity, heat and transportation.

Last paragraph – there will be a lot less local and community business opportunity if we do connect to the BC power grid rather than investing the money locally.

Page 7

Carbon Pricing text box – it is very disappointing to have federal and provincial/territorial levels of government exempting significant fossil fuel users from carbon tax (Placer miners, Hibernia, oil sands, diesel power generation, etc.). Compared to the costs the fossil fuel industry has added to the cost of fossil fuels at the retail level just within the last year and a half, the proposed carbon tax is small. We have all had to pay the increased costs from the fuel suppliers, we should all be able to live with the very modest level of carbon tax.

The carbon tax should not be rebated directly to Yukoners or businesses, it should be used to provide further incentives for users to reduce their consumption of fossil fuels, full stop.

Page 8

Once again we have significantly outdated information on electricity. We now rely on fossil fuel generation to meet winter energy and peak demand supply and this reliance will go up in March 2019 when Victoria Gold connects to the grid. We will then have in the order of 15% of our electricity come from fossil fuels. We cannot plan a realistic future based on how things were in the past.

We desperately need to develop more local renewable energy supplies instead of talking about and spending money on studying a nonsensical power line to BC. I want to see 20% or more of our winter energy produced from wind (which peaks in winter). Wood based biomass generation can be a reliable and substantial winter supply and a new smaller hydro project would also be helpful. To make intermittent renewables and our existing hydro resources more useful and to reduce fossil fuel power generation we should be developing a pumped storage hydro project. Since new homes are mostly being built with electric heating systems the need for winter energy and capacity is growing very rapidly. Pumped storage hydro may be one of the only ways to meet this peak load. Seasonal biomass generation may also be helpful.

But most of all we need to get our head out of the sand by thinking non-polluting renewable energy can compete with the purchase cost of polluting fossil fuels. The real cost of fossil fuel generation is much, much higher than its purchase cost. The cost of new non-polluting renewables will be higher than the present purchase cost of fossil fuel, that is reality. For example the energy from the Mayo B hydro project without subsidies is in the order of \$0.30 per kWh. Our electricity prices should be based on non-polluting renewables, not climate change causing fossil fuels.

The best way to encourage Yukoners to conserve electricity is to price it realistically. No Yukon government in the past 20 years has had the wisdom to do away with counter productive electricity subsidies, both direct and indirect.

My biggest concern with our electricity system is just what I have explained above – it is based on the myth that electricity must be subsidized and that it should be based on the lowest cost polluting fossil fuels available. Once new renewable energy supplies and electricity rates are at realistic levels then we will see more wise use of electricity (conservation and efficiency) and more new local renewable energy supplies.

Unfortunately our Yukon Utilities Board has made some very inappropriate decisions such as gutting most of an entirely cost-effective DSM plan, including capacity / demand focused projects, in 2013. The Yukon government (YG) must be prepared to issue them direction to require or permit the utilities undertake projects and actions that are in everyone's long term interests. The YG would also do well to refrain from the direct subsidies to Yukon Energy (including capital grants and artificially low interest rates).

Page 9

I would like to see more non-fossil fuel heating systems being installed. Most new homes have baseboard electric heating systems installed but commercial buildings often use propane and oil. YG can and should be encouraging the use of non-fossil fuel based systems such as wood pellet heating systems. All levels of government in their buildings could and should be installing biomass chip or pellet heating systems. This would really foster local industry and employment in addition to reducing GHG emissions.

The YG can and should be revising residential and commercial building insulation (and electrical efficiency) standards to reduce heat (and electricity) requirements. Codes and standards need to be

designed for future requirements, not just catching up to present or past requirements as they have been doing. To deal with existing housing and other building stocks retrofit incentive programs plus training and education in the most up-to-date materials and practices for contractors involved in renovation work would be very beneficial.

What actions can we take? In my home I have upgraded attic insulation (to about R80), upgraded most windows to quad-pane argon-filled double low-E windows, and installed a wood stove which provides roughly 90% of our annual heating requirements. We have removed our oil heating system and installed an electric furnace since the insurance company oil tank standards would otherwise have required us to spend close to \$5,000 on upgrades. In the next few years we plan to do an exterior retrofit to add in the order of R20 to the exterior walls. Our house (purchased in 2008) was contractor built in 2004 to minimum code requirements which were about 20 years out of date at that time.

My biggest concern with our heating system is our limited number of alternatives to fossil fuels. Electric heating makes sense in smaller high efficiency homes, but our electricity systems seem to be focussing on fossil fuel-based generation rather than renewable energy. An established wood pellet business and automated reliable home pellet heating systems would give us one more alternative.

Page 10

It is disappointing the YG has done essentially nothing about reducing fossil fuel use in transportation. There have been no incentives or actions to decrease fossil fuel use by discouraging the purchase and use of large, fuel-guzzling vehicles. For example YG could implement higher and graduated annual licensing fees for larger engines and increase the low level of territorial tax on gasoline and diesel fuel, then using the increased revenues to support improved public transportation and encourage the purchase of more fuel efficient and electric vehicles.

I would like our transportation systems to include a much higher level of public transport both between communities and within the Whitehorse area. A much greater focus should also be put on encouraging smaller fuel-efficient and non-polluting electric vehicles.

The only issue I am concerned about with our transportation system is the overbuilding and spending on road infrastructure within the Whitehorse area because the roads are clogged with commuter vehicles, at least partly because of the lack of a good public transportation system.

Page 11

In my view we are not managing our land resources well. Yukoners seem to want to spread out all over the land. Rural subdivisions and country residential lots are impacting a significant portion of our lands. These developments also significantly impact the fossil fuels we use – for initial development, including road and power line building, and for ongoing use for commuting long distances to work as well as road and powerline maintenance. These developments also significantly affect wildlife habitat through direct loss and through human-wildlife conflicts.

In my view when we do have to build road and power lines we should be minimizing the land surface impacted and making use of all of the wood that is cleared from the land rather than just open air burning. Road and powerline brushing also does little to make use of the biomass.

The biggest risk that we face in my view is that of forest fires, and this is being exacerbated by climate change. We need to reduce the risk around communities with fire breaks and fire-smarting. The wood removed can and should be used for biomass heating at least, ideally power generation or combined heat and power. We should probably also be harvesting in areas of mature to over mature forests.

But what do we do around rural developments? It seems to me that they are significantly at risk and will likely consume an inordinate amount of public resources in the event of a fire.

We can help offset GHG emissions by making use of fire-killed wood and replanting burned areas so that the regeneration process is sped up and we capture and store more carbon in these forests.

Page 12

All communities need realistic power purchase pricing from Yukon Energy and ATCO for the renewable power they can generate. The YG needs to direct the Yukon Utilities Board to accept that a premium price over the purchase cost of fossil fuels for power generation will need to be paid for renewable energy. Only by doing this can Yukoners build up the expertise and experience to reduce future renewable energy costs. The fossil fuel industry from Alberta to Newfoundland and Labrador has benefitted from enormous government support (federal and provincial) and we cannot expect our small communities to be able to build renewable energy projects to compete with this industry without first getting a leg-up.

Page 13

No one in Yukon will gain experience and skills unless we create an environment in which the new renewable technologies can compete with the existing fossil fuel structures. Various suggestions have been made on the preceding pages. We will not get there by building a power line to BC. We will not get there if renewable energy projects must be lower than the purchase cost of fossil fuels. Without these actions we would be exporting our economic opportunities elsewhere and subsidizing their projects with our electricity payments and our taxes.

There are renewable energy opportunities (in electricity and heat) that can blossom if YG is prepared to create the right circumstances. So far YG is showing little actual appetite to do so.

Page 14

The implementation of this strategy will require more than suggested, it will take financial resources in the short term to make gains in the long term. YG can raise the required funds by ceasing senseless subsidies and rebates, and charging fees that discourage fossil fuel use and generate GHG emissions.



December 17, 2018

Aletta Leitch
Senior Project Manager
Climate Change Secretariat
Environment Yukon
Box 2703
Whitehorse, Yukon Y1A 2C6

Dear Ms. Leitch:

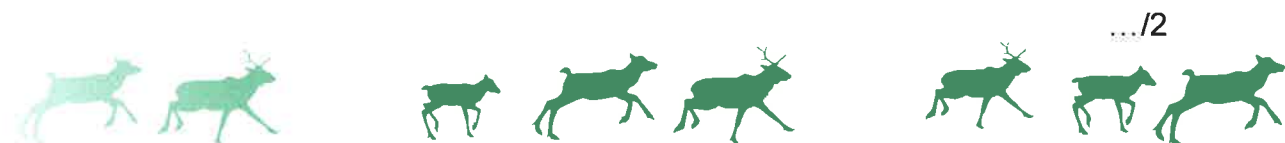
Re Strategy on climate change, energy and green economy

The Porcupine Caribou Management Board (PCMB) appreciates the opportunity to comment on the values and principles we consider important in the development of a new strategy on climate change, energy and green economy.

The PCMB was established in 1985 as an advisory board under the *Porcupine Caribou Management Agreement* (PCMA). The PCMB's mandate is to ensure the collaborative management of the Porcupine Caribou herd, protect and maintain its habitat in Canada, communicate information about the herd and provide recommendations to agencies responsible for managing the herd. The PCMB's membership includes the government of Yukon, Northwest Territories and Canada and the First Nations and Inuvialuit governments in Yukon and the Northwest Territories. The PCMB works to gain a better understanding of this dynamic and important natural resource and how it can best be managed.

Much coordinated effort is put into annual management and monitoring activities, and each year a meeting is held with PCMA Parties and stakeholders to discuss the welfare of the herd and decide on appropriate management actions. At these meetings, two recurring concerns have consistently been raised: (1) the incorporation of traditional knowledge in management of the herd and its habitat; and (2) consideration of the cumulative effects of human development and climate change on the herd and its habitat.

In terms of developing a strategy on climate change, energy and green economy, the PCMB feels that aboriginal traditional knowledge (TK) should be an essential element of any future management practices. Also, while recognizing that industrial and human development are integral parts of our economy and drive



energy requirements, the PCMB strongly supports the concept of understanding how incremental changes will eventually affect habitat, behavior, health and productivity of the Porcupine Caribou herd. The cumulative effects of increased development should be understood, anticipated and mitigated so that the preservation of habitat and wildlife becomes an integral part of evaluating future economic benefits and energy needs.

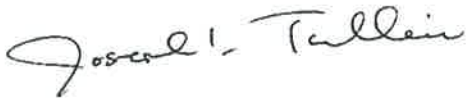
The Porcupine Caribou herd has been part of the economy of First Nation and Inuvialuit people in Yukon, Northwest Territories and Alaska for thousands of years. In fact, caribou harvesting has been a foundation of a green economy in the north. It is essential to maintaining a cultural, traditional and healthy lifestyle for indigenous people. One of the most productive uses of landscapes in many northern environments is the maintenance of caribou herds and their habitats.

It will be important to address climate change as northern species could experience the greatest impact by environmental changes. For example, accelerated permafrost degradation and increased frequency of wildfires could negatively impact availability of lichen which is a primary food source for caribou. Additionally, changes in timing of green-up could affect the ability of caribou cows to produce high quality milk during the first month of life, resulting in decreased calf survival.

As a Party to the PCMA, we look to the Government of Yukon to consider the welfare of the Porcupine Caribou herd and its habitat and to sustainably balance conservation with the need for economic growth and energy demands.

The PCMB appreciates the opportunity to provide feedback on the principles of the new strategy on climate change, energy and green economy. We look forward to participating in the consultation as a comprehensive value-driven, forward-looking strategy is developed for the Yukon.

Sincerely,



Joe Tetlich
Chair





December 17, 2018

To: Roxanne Stasyszyn
Director, Communications and Public Engagement, Department of Environment
Roxanne.Stasyszyn@gov.yk.ca
Aletta Leitch
Senior Project Manager
integratedstrategy@gov.yk.ca

Re: Yukon Government request for input re: A new strategy for climate change, energy and green economy in Yukon

- This submission focusses on issues related to waste management and associated consumption topics.
- It will concentrate on topics that can best be categorized as falling under the green economy, however
- there are issues that are related to climate change and energy.

The Raven Recycling Society is of the opinion that if a truly green economy is to be obtained, the consumption cycle that the vast majority of Yukoners partake in has to be radically rethought. This will not be easy, nor will it occur overnight. However, the alternative of continuing on the present course is simply unsustainable from an environmental perspective.

The Yukon Government must emphasize the growth of the circular economy. A circular economy redefines growth, focusing on positive society-wide benefits. By gradually decoupling economic activity from the consumption of finite resources, and underpinned by a transition to renewable energy sources, the circular economy builds economic, natural and social capital. The three principles of a circular economy are:

- Design out waste and pollution
- Keep products and materials in use
- Regenerate natural systems

Should the Yukon follow the circular economy path, zero waste should be obtainable. A Zero Waste system reduces natural resource depletion, conserves energy, mitigates climate change, reduces water usage, prevents pollution, stops ecosystem degradation, and strengthens the local economy. Zero Waste planning is one of the fastest, easiest and most cost-effective ways Yukon can address its climate change, energy and economic needs.

The way Yukoners produce, consume and dispose of our products accounts for significant greenhouse gas (GHG) emissions in production, transportation and disposal. A Zero Waste system utilizes fewer resources by keeping products and materials in use. This will mitigate GHG emissions by reducing the need for extraction of virgin fossil feedstock and reducing transportation emissions from imported goods.

Zero Waste systems promote local composting, which in turn creates healthy local soils. Healthy soils grow healthy local food and mitigate climate change by storing carbon. Increased diversion and material recovery means fewer materials in our landfills and less landfill GHG emissions. Zero Waste and materials recovery creates ten times more jobs than landfilling and incineration. A Zero Waste community keeps money and materials circulating locally, strengthening the local economy and building resilient communities.

There are many actions to be taken in achieving a circular economy, but what follows are some suggested steps. No doubt other actions will have to be taken, but Raven Recycling considers these points a good starting step.

Ban Single Use Take Away Food Containers And Bags

A truly green economy would not have waste. Items would be consumed from responsible sources, designed in such a manner they are long lasting, and at the end of their lifespan either reused or fully recycled.

One way to do this is to remove single use items from the consumption cycle.

Ban single use plastic bags. While they are a small percentage by weight and volume of the waste stream, they are visually one of the most polluting. They are also difficult to process for recycling. Removing them from the Yukon consumption cycle is the 'green' thing to do.

Ban single serving food containers (such as to-go coffee cups, hamburger containers etc.). An interim step in phasing these items out would be to insist they are made of easily compostable components. However, not all Yukon communities have composting programs so this approach must be recognized as only being applicable to certain Yukon areas.

Remove Poisonous Items

It is hard to believe that toxic herbicides and pesticides are readily available throughout the Yukon with little to no oversight on how they are used, especially at the individual level. At the commercial level the use of herbicides and pesticides is regulated, although the cumulative impacts of such applications would appear to be unknown. With the rise of agriculture in the Yukon (in and of itself a good thing in ensuring food security) there is a concern that increased herbicide and pesticide use could have serious large scale negative environmental impacts. Serious thought should be given as to how commercial operators (including farmers) can successfully manage their operations without toxic herbicides and pesticides and what, if any, alternatives are available.

Ban toxic herbicides/pesticides at the household level. Non-toxic alternatives are available. This is important in areas where the groundwater table is at risk, for example the Riverdale subdivision of Whitehorse (where the City of Whitehorse has placed water drinking wells).

Improve the Recycling System

A truly green economy would see cradle to grave responsibility for all items. This is best done through the Extended Producer Responsibility program. Basically, the producer of an item is responsible for its eventual end of life reuse or recycling. EPR programs create financial incentive for producers to better design products that last longer, and can be reused, repaired or effectively recycled.

British Columbia has a world class, industry-led product stewardship model. This model is a shift from government-managed to industry and consumer managed and paid recycling programs. EPR in BC is results focused and performance reporting is key. Costs are not downloaded to governments or taxpayers, and industry is allowed to set the program with minimal government interference.

The expansion of Yukon's product stewardship programs and introduction of EPR programs is essential to effectively recovering materials and encouraging good environmental design of products by industry. The Yukon Government should implement the Extended Producer Responsibility program. In the short term, start off with plastic and paper items. In the long term, add all consumer items. Perhaps the easiest and simplest option would be to join up with the British Columbian system.



RAVEN RECYCLING

Our Commitment is the Environment

100 Galena Rd Whitehorse, Yukon Y1A 2W6

ed@ravenrecycling.org ph: (867) 667-7269 ext 25 fax: (867) 668-5744

As part of the EPR system, items currently covered by the Yukon's Beverage Container Regulations should have the financial amounts associated with them reviewed. Raven Recycling suggest that the Yukon Government raise refunds on items currently covered by the Beverage Container Regulations. Some of them have not been adjusted since 1992 while other were decreased in 2017. An increased refund rate will increase return rates.

Air Quality

Air emission testing for vehicles should be done. With the rise of electric vehicles, there might not be a long term requirement for this, but in the short to medium term there should be some form of testing to ensure air pollution controls are met. It would have the added bonus of ensuring vehicles that do run on carbon fuels have adequate mufflers, thus contributing to peace and quiet in the Yukon.

Air pollution from heat and energy sources (be they wood stoves or LNG and diesel powerplants) should also be regulated. Air pollution is one waste stream that is often overlooked in developing a circular economy. Efficient fuel sources and equipment can not only greatly increase heat and energy generation in a cost effective manner, but also reduce particulate emissions as well as noise pollution (in the case of fossil fuel generators).

Resource Extraction

Encourage initiatives that result in 'mining' waste streams, such as salvaging construction and demolition 'waste' prior to it entering landfills. Considering all the subsidies given to the mining sector, a little incentive to those individuals and industries that mine the waste stream would not be out of place.

Encourage research and industry that reuses/repurposes/reprocesses Yukon 'waste' items. This can be done with the various research institutes operating in conjunction with Yukon College. There is the potential for wealth and job creation here in the Yukon on this topic.

Carbon Tax

Ensure non-governmental organizations and charities are eligible for the carbon tax rebate. It is the understanding of Raven Recycling Society that the carbon tax rebate will be applicable to businesses but not non-governmental organizations. Raven Recycling has a fleet of trucks that do consume fuel. Raven will be paying the carbon tax but not be getting the rebate. Of course, this will probably ensure Raven switches over to an electric vehicle fleet sooner rather than later, but one does like to operate on a level playing field with commercial businesses also active in the recycling field.

Regulatory Oversight

Ensure environmental assessors and regulators (YESAB, Yukon Water Board, Yukon Utilities Board) incorporate green procurement, waste management, and waste disposal into their various reviews of projects.

If you have any questions, please contact the undersigned.

Joy Snyder
Executive Director
Raven Recycling Society

***"When all is said and done,
when the mines come on- line,
the YEC
will be able to lower electrical rates
for other
customers on the system."***

David Morrison, former Chair and CEO Yukon Energy

UCG

YUKON UTILITIES CONSUMERS' GROUP

CONSUMER PERSPECTIVE
YUKON ENERGY STRATEGY
PART VII

CLIMATE CHANGE, ENERGY AND A GREEN ECONOMY

RESEARCHED AND WRITTEN BY
ROGER RONDEAU
DECEMBER 2018

UCG

***"Energy is an important piece in
terms of the
health, resiliency, and sustainability
of our communities. If we want to
thrive as Yukoners, and protect the
things that are important to us,
energy is key."***

Lesley Cabbot, Chair Yukon Energy Corporation

TABLE OF CONTENTS

1. INTRODUCTION.....1-2

2. HISTORY OF PUBLIC CONSULTATION.....3-4

3. WHAT HAS BEEN ACCOMPLISHED SINCE 2008.....5

4. WHAT HAS NOT BEEN ACCOMPLISHED SINCE 20086-8

5. WHERE DO WE GO FROM HERE 9-12

1. INTRODUCTION

The Utilities Consumers' Group is pleased to present this research paper which is the SEVENTH in a series of energy-related articles written with the consumer in mind; i.e. for the people who ultimately pay the bills to keep the wheels of the energy sector turning.

Prior papers include the **Development of a Yukon Energy Strategy (2008)**, **Utility Governance(2008)**, **Secondary Power(2009)**, **Electricity Restructuring(2010)**, **Electricity Regulatory Reform in the Yukon(2012)** and **Electrical Policy and Regulation for Industrial Customers(2016)**. UCG also presented a research paper on the **Climate Change Strategy and Action Plan to the Yukon Government in 2008-09** and the **Biomass Energy Strategy 2017**.

This particular report will outline:

1. The history of Energy consultation;
2. What has been achieved from the last 2008 Energy Strategy?;
3. What has not been achieved from the last 2008 Energy Strategy? ; and
4. Where do we go from here?

The Yukon Utilities Consumers' Group has been actively involved in community development of a Yukon Energy Plan since the early 1990's. We have supported many processes in the past 20 year period; a Commission on Energy Policy, an Energy Strategy, a Symposium/Charette of Energy Ideas, a Climate Change Strategy; a Biomass Strategy; a Micro-generation Program; an Independent Power Producer Program; a Demand-Side-Management Program; and all that has transpired in between these public debates, including several 20 year Resource Plans produced by the Yukon Energy Corporation.

What concerns us most is that the focus on Energy discussions has always been driven by our publicly-owned utility, the Yukon Energy Corporation (YEC). For example, although the Yukon Government was already undertaking a comprehensive energy strategy, the YEC at the same time took the reigns of a charette and then used this to push their agenda. This resulted in millions upon millions of dollars being squandered on massive consultant and in-house costs allocated in the name of research and development. Most of these projects are lining the shelves of the corporate headquarters with little or no movement on any of these, while at the same time now being requested as an add-on to our already inflated rate base, for Yukon electrical ratepayers to pay off. The corporate agenda, along with their preferred consultant, was to drive the development of Liquefied Natural Gas, even though this was at the bottom of the list of the most desirable coming out of the public charette. All the other projects were given lip service, meanwhile, costing millions of dollars of R&D, but never developed nor likely planned to be ever developed.

Even Demand Side Management took a demanding toll on dollar resources to implement a simple and rigorous plan developing tools to lower consumer demand for electricity. The result of this program was simply a very poor rendition of what should have been accomplished.

Why? Because the two electrical utilities drove the bus...and in reality energy management is not in their best corporate interests.

To the UCG, if all of this invested money by the YEC, from all of these research projects would have instead been allocated to evolve some hands-on pilot projects (such as biomass, run-of-the-river, solar or wind), we could have long ago developed the Old Crow, Burwash, Teslin, Haines Junction and Watson Lake renewable off-grid projects, to name a few. Ten years prior, rather than just now slowly becoming a reality. And to note, none of these are being motivated by this same Yukon Energy Corporation.

What added fuel to this fire, was that during this same time period, we also had the government (Energy, Mines and Resources) developing their own plan of action on Biomass and Geothermal. Instead of working together with all the government branches, including the YEC, these entities were at odds, going in their own functionary directions, one looking at the heating sector, the other for providing alternative electrical generation.

This paper was commissioned by the Yukon Utilities Consumers' Group written with the intent to stimulate immediate action about options for the future by introducing considerations that will assist in deciding various legislative and policy changes essential for the Yukon energy sector, including the electricity system and its regulation.

2. HISTORY OF ENERGY-RELATED PUBLIC CONSULTATIONS

We will start with the Commission on Energy in the late 1990's. In 1996, this commission was introduced by the newly elected New Democratic government to give one of their elected members a job outside of the cabinet offices. This was a long drawn out process of meetings with interested parties of the public, but with seats mostly filled with government personnel. Over a million dollars was spent on this so-called consultation, with discussion papers on Wood and Energy Alternatives produced in 1997. This resulted in over 40 recommendations delivered to cabinet. When all was said and done, to this day, only a very limited few of these recommendations were ever initiated nor attempted to be implemented.

During this time frame, the largest customer, the Faro mine, ceased operations, so this NDP regime sat back and let the status quo roll. Little money was spent on keeping up the infrastructure of the Yukon Energy Corporation as there was a glut of electrical generation to be had. So instead, with the YEC, they developed a Secondary Energy Program which gave certain interest groups rates at half the cost to other customers. The rationale behind this program was to sell the surplus energy generated, with a so-called interruptible clause, which in reality has rarely ever been used. It has simply been seen as a preferential program controlled entirely by the utilities to dole out this program benefits to whom they so wished.

During this time period, nothing was realized on changing how the public utilities were operated nor regulated. A sour stain on this regime which promised to make necessary changes to make our utilities more accountable and productive.

Ten years later, when the Yukon Conservatives took over the reigns of government, they needed their slant on an energy plan of action fulfilled. So, they initiated the Yukon Energy Strategy in 2008, setting up objective papers as discussion tools. The logic was to explore policies and programs that could be utilized to reach each of these objective strategy goals. In 2011, after a consultative process, a conclusion paper for Energy Strategy for Yukon identified energy priorities for the Yukon government, i.e. to "provide direction for developing managing and using energy over the next ten years." ¹ **It is this particular document which will be surveyed to gauge how much has been accomplished from this strategy.**

Meanwhile, it must not be forgotten that in 2011 the Yukon Energy Corporation struck out on its' own to conduct what they called the Energy Charette. The goal was to use this planning process to direct ways to carry out the objectives for the territory's electrical energy future. This was a exercise in futility from the get-go as directions were already being defined by the Government of the day's Energy Strategy. YEC was simply duplicating the process so that the corporation could set their own agenda by using the outcome to spend millions upon millions of ratepayer money on specialty consultant groups to research and develop the many ideas flushed out of the charette. In reality, the corporate management and their close consultant allies already had as their agenda, the development of Liquefied Natural Gas for the new energy alternative.

¹ Energy Strategy for the Yukon, Government of the Yukon, 2009

Demand-Side-Management, which was the obvious first choice by all representative locals, organizations and interested parties, took second fiddle. The two utilities did undertake a multi-million dollar stakeholder consultation and research project to develop a "dime" DSM outcome; i.e. to convert to curly light bulbs, later LED light bulbs and vehicle block-heater timers. The two utilities set up, each to their own agenda, in-Charge offices, personnel and programs costing hundreds of thousand of dollars to implement, develop and operate.

Taking part in the last two regulatory Yukon Utilities Board processes (ATCO and Yukon Energy rate hearings), it is very difficult to justify that these DSM programs, with all of their costs to design and implement, are achieving what they set out to do; i.e to be the least costly and most productive way to provide more energy to the system rather than having to develop new sources. In the testing of these programs during this regulatory action, the UCG discovered that this has simply been another means for the utilities to earn more income.

Also important to note, that during the same time lapse (and even long before this), we also had the Energy Solution Centre running their own programs on energy conservation. To be perfectly frank, in the view of UCG, these ESC programs are much more far-reaching than anything the utility providers ever produced for their millions of dollars spent and being spent.

So, the first thing that one can pass judgment from all of this, is that there are far too many cooks in the kitchen. Each government branch doing their own thing, costing millions yet never coordinating an Energy Plan. The objective of being a **comprehensive energy strategy** has never yet to be realized!

UCG can only hope that this "renewal strategy" will finally encompass a real comprehensive plan, so as to not have these bureaucratic factions continue going off in their own glory with little being accomplished.

2. What has been achieved from the last 2008/09 Energy Strategy?

As stated in the earlier comments, there finally appears to be some progress in the development of alternative energy solutions for both off-grid and on-grid communities. Burwash Landing, in tandem with the Kluane First Nation is developing a wind and solar program to offset diesel useage. Old Crow, working with the Vuntut G'wichin First Nation and ATCO Electric Yukon are developing a solar strategy to offset diesel. The Town of Teslin, in coordination with Teslin Tlingit Council are developing a biomass/wood strategy for their community.

There was at one time a movement for a biomass/wood gasification program to be initiated for the Haines Junction area, but this has stagnated, for some unknown reason. Will it be resurrected?

Also the Yukon government has initiated some biomass infrastructure (the College, the Whitehorse Correctional Centre, downtown Whitehorse) but none of these appear to be very productive for whatever reason.

The City of Whitehorse has fallen drastically short on improvising some ways to combat the energy conondrum we are trying to solve. CoW was to set to initiate some type of wood/biomass or geothermal district heating/electrical alternative when developing the new community infrastructure in Whistle Bend. This lost momentum, just as did the use of solar for energy needs in the Canada Games Center. We have never been told why by any functionaries.

3. What has not been achieved from the last 2008/09 Energy Strategy?

To answer this, we must examine the major goals from the 2008/09 Energy Strategy, evaluating renewable energy progress:

- increase renewable energy supply in the Yukon by 20% by 2020;
- develop a policy framework for geothermal energy;
- support and demonstrate renewable energy projects in communities off the electrical grid;
- conduct pilot studies to assess the feasibility of renewable energy initiatives; and promote renewable energy sources for heating and transportation.²

If we wish to achieve bullet #1 of 20% renewable supply by 2020, we had better get at it. The wheels of government and bureaucracies running off in their own specific arena tends to strangle real progress for accomplishing this result. Yukon Energy Corporation, as an arms-length entity, are the most obstructive as they have their own agenda which is to sell more of their power, whether it be hydro or Liquefied Natural Gas or diesel.

The delay in implementing a sincere Independent Power Production (IPP) manual, with regulations and prices, has also impacted progress. We have heard rumblings of a private IPP revitalization of the North Fork/Dawson hydroelectric facility; a private IPP solar farm in the Whitehorse area; other private micro-hydro developments; a private IPP wind farm in the Mt. Sumanik/Whitehorse area, etc., but none of these seem to be moving forward. Why the delays?

Bullet #2 UCG is unaware of any policy framework developed or being developed for geothermal energy; i.e. in the Yukon there is no legislation governing geothermal title or regulating geothermal engineering and environmental practices. As well, there has been limited geothermal resources developed in the rest of Canada for electrical energy to provide examples. But many other countries, including the United States/Alaska have utilized this resource. Geothermal possibilities were identified in the Energy Strategy as well as the YEC Charette.

A charrette discussion paper demonstrated areas of geothermal interest as well as what was needed to develop such a strategy.³ Three volcanic areas were identified; i.e. Volcano Mt. near Fort Selkirk, Alligator Lake area near Whitehorse, and Northern Cordilleran Volcanic Province near the Yukon, BC border. At least a dozen thermal springs have been reported, but they need a certain temperature to make them viable. The Geological Survey of Canada has identified hot spots, but this needs more in-depth study. The same holds true for geothermal associated with fault systems.

Bullet #3 and #4 are just beginning to be realized as discussed in 2. of this report.

² Ibid, p. 4

³ Yukon Energy Charette; A Discussion of Geothermal Resources and Their Potential For Utilization in the Yukon Territory; by T.L. Sadler-Brown, P. Geo., March 2010

Bullet #5 has been completely neglected or at least little or no headway has been made productive. Biomass strategy may be a development, if it is finally followed up on.

So let us examine biomass, for which we have heard much-a-do. This has been studied and re-studied (all the way back to the late 1990s where Autumn Industries completed reports for the Yukon Government on the viability of using waste wood from sawmills and fire kill for district heat and power generation in Watson Lake, Whitehorse and Pelly Crossing, and yet there has never been concrete movement in this area.

Both the Yukon Government and the Yukon Energy Corporation studied, consulted and developed reports on biomass in the early 2009-2010s for their preferential purposes. Finally, we have a new Biomass Strategy (2017) ⁴ as one goal for implementing the Energy Strategy for the Yukon in the new milenia.

BUT, this strategy conspicuously neglects any mention of a combined district heating and electrical/cogeneration production pilot project. This could be done with wood gasification technology, which is also conspicuously absent from this action report.

With the immediatete need to sincerely fire smart all of our communities, with large enough swaths of clear cut around each community or at least in a east-west swath on both sides of a community such as Whitehorse, this would supply our needed fuel source for sometime. While at the same time mitigating the risk of a severe wildfire.

Any other slashing of forest cover for new areas of residential/commercial growth, highway or other transportaion/transmission corridors etc, would also provide fuel wood for biomass or wood gasification. The bug-infested area near Haines Junction needs to be harvested soon if it is to be viable.

UCG would suggest to open these areas of wood supply to private enterprize, so that development of this option can move forward ASAP. This could develop a more competitive 'block-wood' industry for wood stoves and likely open up a private wood chipping alternative.

Since solar alternatives appear to have become the latest hot trend, UCG will look at this a bit deeper. Solar energy is separated into two major types: heat and electricity. Solar energy has been utilized for sometime now, for the purposes of heating buildings, water and industrial processes with solar thermal technologies. This involves a pretty straight forward application.

But since many major advancements in photovoltaics(PV) and solar thermal-electric technologies has also resulted in major cost reductions, the electric option is now being realized as a viable alternative renewable, especially at a larger scale.

PV uses electronic semi-conductor cells which utilizes the photovoltaic effect to convert solar radiation into electrical energy. This involves two basic types: systems using concentrating PV

⁴ Yukon Biomass Energy Strategy, Yukon Government, Department of Energy, Mines and Resources, 2017; <http://www.energy.gov.yk.ca/Biomass-Energy-Strategy.html>

(more applicable to utility or larger scale) and systems using flat modules (smaller-scaled for residential and commercial).

Solar-electric thermal processes applies solar radiation to heat liquids, usually a salt mixture to absorb the heat, which then produces steam to drive standard turbine-based electricity generators.

At a basic understanding, it would appear as these later two applications could be used to provide both heat and electricity. Such a capability would be a very viable alternative for a newly developed residential and commercial area in the Yukon, to initiate a complimentary "district cogeneration" system. A pilot project, anyone?

At this time, we must be aware of impacts of these solar alternatives as mentioned here as well as in section #4 below, possibly resulting in environmental concerns in the future. This must be factored into the life-cycle cost analysis as well as the payback time to embody, not just the capital costs, but closing/disposal environmental costs and the energy expended in the manufacture and installation. This alternative major draw-back is that it does not provide the electricity with a continuous immediate-on-demand, so must therefore involve some type of storage facilities, increasing the costs.

UCG suggests it is time to consider in-stream hydrokinetic turbines in our future Yukon. These run-of-the-river technologies have low environmental impacts, low maintenance, high-capacity factor, on-grid/of-grid adaptable, small footprint and scalable.

Although thorium salt reactors are also a viable alternative, these are more likely to be developed in a larger scale arena. Perhaps, Casino Mining Development for a start? Do not confuse thorium salt reactors with "nuclear" as the word reactors might confuse. Look it up!

"Smart electric meters" and "smart grids" also receive glowing recommendations, especially from the conservation memes. This is somewhat misleading!

First, because we are such a small consumer-based territory, it would be very fiscally onerous to implement such technologies in the Yukon to receive any possible benefits, such as easier means to develop time-of-use programs. It is interesting to note that this can be alternatively achieved with such technologies as hot-water heater timers set for non-usage during peak periods or the introduction of seasonal differing rate schedules.

Second, these two 'smart' technologies have been proven to have serious negative impacts in jurisdictions where they have already been implemented; i.e. health and environmental impacts resulting from increased electromagnetic fields, fire hazards increased, interference problems with other electronics and telecommunications, loss of consumer decision-making choices, and prone to internet connection power hackers.

4. Where do we go from here ?

It is good to see that ATCO Electric Yukon is being pro-active in helping develop alternative renewable energy initiatives for off-grid communities. It is, however, obvious that ATCO has its' own interests to serve here, i.e. if they do not get in the front-door of alternative development in these communities, they will be left out to First Nation and private IPPs. Then, this competitive outside utility corporation would be left with only isolated stand-by diesel generators.

Also, private entrepreneurs such as Northern Energy Capital (wind turbines), Nomad Contracting and Electrical Services (commercial solar farm), Ta'an Kwach'an Council's Da Daghay Development Corporation in partnership with Yukon Geological Survey (geothermal heat flow in Whitehorse area) are positive signs for moving forward.

As long as these private entities are not forced out with obstructions from Yukon Energy Corporation with unacceptable Purchase Power Agreements or the Yukon Government's Independent Power Production policy strangulations.

We must also be cognizant of problems being faced in other jurisdictions, with movements to alternative renewable energy. For example, Ontario's renewables strategy has proven hopelessly expensive, 90 per cent of their cost comes from government-mandated subsidies, while they also loom as major despoilers of Ontario's environment. ***"Solar cells cannot be easily recycled, leading environmentalists to warn that solar-panel disposal will become an explosive issue in two or three decades because of leaching from cadmium, a suspected carcinogen, and other solar panel components. Unsightly wind turbines and the long-distance transmission corridors they often require already rank as a chief despoiler of the Ontario countryside, quite apart from their toll on birds and bats."***⁵

To UCG this does not mean we ignore these renewables, only be cognizant of drawbacks and diversify in small scales. Utilizing all forms of renewable energy in different parts of the Yukon would be the best alternative.

Since the Yukon is now at a crossroads, a state of flux for providing sufficient capacity to supply electrical energy loads to current customers, it is now doubly important to discuss and evaluate what is to be done going forward in this particular energy sector.

UCG strongly favours alternative programs and development that can run on their own merit, with costs no greater per kWhr. as what it costs for alternative LNG/diesel generation. Government subsidies, such as what is currently taking place in the Micro-generation Program, allowing residential, general service and industrial classes to offset electrical consumption by connecting renewable energy technologies, has to be carefully time-tested, managed and monitored.

⁵ Energy Probe Report on Ontario's Energy Dilemma, taken from Lawrence Solomon: Will Ford keep his promise to lower hydro costs? Financial Post; October 30,2018

Although, this may appear to be a logical solution, at first glance, it has its flaws. For example, all taxpayers are paying for this through grants for small scale renewable energy generating systems, as well as an annual government reimbursement for surplus energy generated, while only a few affluent citizens have the up-front money needed to develop this infrastructure for their own purposes.

With the carbon tax or cap-and-trade now being implemented in the Yukon and the rest of Canada, this is also a good time to discuss climate strategy as a complimentary package to energy in setting policy changes for the Yukon.

There are, however, many questions that are unanswered that need clarification from this government before a legitimate discussion can take place. For example:

- How much income will the carbon tax earn each year?
- What is the climate target to be set for reducing emissions, including individual, industry and transportation?
- Will the carbon tax alone meet our climate targets?
- How do we determine an accurate and transparent way to track carbon emissions?
- What are the alternatives that we should discuss to determine what can be done with the proceeds from this tax? Should it all be returned as a rebate to all Yukoners or should some of the proceeds be used to initiate other options; i.e. reinvest some of the proceeds in initiatives that further reduce emissions?
- How do we set up a reasonable balance for entertaining renewables and weaning us off of fossil fuels?
- Do we continue with the oil and gas moratorium?
- How do we develop better measures and policies for a Yukon-based reduce, reuse and recycling, especially for plastics and styrofoam products?
- How do we set up collaborative and integrated waste management and diversion plan for all Yukon communities?

Acting on climate change must produce policies that benefit our Yukon economy, our health and our quality of life. We can no longer think that it's the environment versus the economy! We must decide how we will transition to a renewable economy with local renewable energy investment, deployment and employment. All at the same time as to not impact our quality of life. Working with local First Nations, communities, local businesses and entrepreneurs will be a necessary focus of the government.

In determining how to allocate the proceeds of a carbon tax we can look at how other jurisdictions, which have had cap and trade policies in place for many years, have transitioned.

For example, in California: "16 per cent of emissions reduction are projected to come from the cap and trade." ⁶ "The rest will come from re-investing proceeds into funds for public

⁶ California Air Resources Board (2015). First update to Climate Change Scoping Plan. http://www.arb.ca.gov/cc/scopingplan/2013_update_climate_change_scoping_plan.pdf

transportation growth, electric vehicle uptake, low-carbon-fuel standards, energy efficiency upgrades and expansion of renewable energy." ⁷

In Quebec: "emissions cap is set to decline by nearly 4 per cent annually, while much of the emissions reductions will come from using some of these proceeds for expanding public transit, supporting energy efficiency and conservation upgrades, investments in renewable energy and community initiatives to reduce GHG emissions."⁸

Alberta too, which may be a surprise to many, has made progress in these initiatives. "In addition to its consideration of adopting a price on carbon, is studying a comprehensive suite of options that looks at phasing out coal-fired electricity and supporting energy efficiency and public transportation." ⁹

It must be noted that the more large scale wind and solar accommodated to any electrical system, the more technical contortions they demand from backup power and the structure of the grid. Accommodating this unreliability has led to outright perversity. "The widespread adoption of wind and solar under Germany's Energiewende ("energy transition") has resulted in rising overall emissions, mainly from coal-fired backup facilities. Meanwhile the green Godot is battery storage, which is always on the point of turning up, but never quite does. Still, the IEA has a scenario for that: What if battery storage becomes really cheap?" ¹⁰

Supply isn't the only area where expensive and unreliable wind and solar need to be adapted. There is also "demand flexibility." This includes having solar panels installed on your roof, or adopting — or being forced to adopt — "smart meters," which can more easily adjust these renewables into the system, while monitoring a household's electricity usage in minute-by-minute detail (time-of-use). According to the report, "The spreading of rooftop solar PV (photovoltaics) and the falling costs of digital technologies, combined with affordable wind and solar power options, are creating a host of new opportunities that enable consumers to take a more active role in meeting their own energy needs." ¹¹

But wind and solar are not "affordable," for most people who want to take a "more active role" in meeting their energy needs. That is, unless they are being heavily "policy subsidized" to stick solar panels on their roofs. Most consumers just want to flip a switch.

As for smart meters, the IEA notes that many countries "have successfully rolled out

⁷ Ibid

⁸ Government of Quebec in Action: Greener by 2020: 2013-2020 Climate Change Action Plan (2012)

⁹ Alberta Ministry of Environment and Parks (2015). Climate Leadership Discussion Document. Retrieved from <http://www.alberta.ca/albertacode/images/Climate-Leadership-Discussion-Document.pdf>.

¹⁰ International Energy Agency Report (IEA); 2018

¹¹ Ibid

smart meters on a large scale, such as Canada, Denmark, Finland, Italy, Norway, Spain and Sweden.”¹² Would such success identified by this organization, echo the smart meter program in Ontario, which was taken to task by provincial auditor Bonnie Lysyk for costing an extra billion dollars and not working as advertised, while several thousand meters were found to represent a fire hazard?

UCG would like you to take note of this article:

"Objection: According to the IPCC 150 billion tonnes of carbon go into the atmosphere from natural processes every year. This is almost 30 times the amount of carbon humans emit. What difference can we make?"

Answer: It's true that natural fluxes in the carbon cycle are much larger than anthropogenic emissions. But for roughly the last 10,000 years, until the industrial revolution, every gigatonne of carbon going into the atmosphere was balanced by one coming out. What humans have done is alter one side of this cycle. We put approximately 6 gigatonnes of carbon into the air but, unlike nature, we are not taking any out. Thankfully, nature is compensating in part for our emissions, because only about half the CO2 we emit stays in the air. Nevertheless, since we began burning fossil fuels in earnest over 150 years ago atmospheric concentration that was relatively stable for the previous several thousand years has now risen by over 35%. So whatever the total amounts going in and out "naturally," humans have clearly upset the balance and significantly altered an important part of the climate system.¹³

In determining how we in the Yukon allocate the proceeds of a carbon tax, we need the government to develop very "clear" criteria to guide any decision-making for establishing "clear" and transparent mechanisms/tools that delivers value to all Yukoners.

Like each area in the rest of Canada, the Yukon must decide what the best use of our renewable resources will be utilized in developing an Energy Strategy into the next short, medium and long term. Then, each individual community and First Nation must decide for their own particular region, which of these best suits their needs.

¹² Ibid

¹³ Grist.Org; Natural Emissions Dwarf Human Emissions; https://grist.org/article/natural-emissions-dwarf-human-emissions/?fbclid=IwAR1Zr88jR-t_OoNBcb_gVEAwIG58V7nyLcnwmj0XNsQCXVZAhaj0VnVyy-Y

***"Definition of bureaucratic insanity:
Doing the same thing over and over,
expecting the same results"
Anonymous***

UCG

YUKON UTILITIES CONSUMERS' GROUP

**CONSUMER PERSPECTIVE
YUKON ENERGY STRATEGY
PART VII
CLIMATE CHANGE, ENERGY AND A GREEN ECONOMY**

**RESEARCHED AND WRITTEN BY
ROGER RONDEAU
DECEMBER 2018**

UCG

***"What humans have done is alter one
side of this cycle. We put approximately
6 gigatonnes of carbon into the air but,
unlike nature, we are not taking any out."
Grist***

***"If humans don't make
the right decision,
on emission;
We will drown or fry in
complete submission."
Mother Nature***



Aletta Leitch
Senior Project Manager, Climate Change Secretariat
Government of Yukon
Box 2703 (V-205) Whitehorse, Yukon Y1A 2C6

Cc:

Shane Andre, Director, Energy Branch, Department of Energy, Mines, and Resources
Rebecca World, Director, Climate Change Secretariat, Department of Environment
Geoff Woodhouse, Senior Policy Analyst, Contact for Department of Economic Development

December 17, 2018

Yukon Conservation Society (YCS) Comments on Climate Change, Energy and Green Economy Strategy Initial Consultation

Prepared on the traditional territories of the Ta'an Kwäch'än Council and Kwanlin Dün First Nation.

Introduction

Thank you for inviting the public to provide comments and input on the Climate Change, Energy, and Green Economy Strategy before writing an initial draft. YCS recognizes that these consultations are a major effort and applauds the government for making an effort to consult at this early stage. We also support Yukon government's approach of collaborating with Yukon First Nations, transboundary Indigenous groups, and Yukon municipalities in the development of the strategy. We hope that this process is productive and beneficial for all parties involved.

Anthropogenic greenhouse gas emissions have increased since the pre-industrial era, driven largely by economic and population growth, and are now higher than ever. This has led to atmospheric concentrations of carbon dioxide, methane and nitrous oxide that are unprecedented in at least the last 800,000 years. – Intergovernmental Panel on Climate Change, 2014¹

We are the first generation to be able to end poverty, and the last generation that can take steps to avoid the worst impacts of climate change. Future generations will judge us harshly if we fail to uphold our moral and historical responsibilities. – Ban Ki Moon, former Secretary General of the United Nations

The Yukon Conservation Society hopes these quotations serve as a reminder of the urgency and historical importance of our actions and decisions as the Climate Change, Energy, and Green Economy Strategy (CCEGES) is developed. Though we are a small jurisdiction, we have a unique opportunity in that small actions can have a measurable impact. To tackle a challenge as massive and overwhelming as climate change it is helpful to break it down into smaller, solvable problems to help us all maintain our sanity and positivity through the effort. Under no circumstances must we allow Yukon's small size to be

¹ http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_SPM.pdf (page 4)



used as a shield to avoid action. The USA is the 3rd most populated country in the world, yet accounts for only 4.28% of the global population.² Does this give them reason to shirk responsibility? I trust that we agree it does not, and neither should Yukon shy away from our global responsibility.

YCS recognizes that many of the solutions necessary to address energy use, climate change and practicing a green economy require fundamental shifts in consumerism and societal priorities. The following information and recommendations are provided as necessary steps toward a paradigm shift that recognizes humans as part of ecosystems and that the ecosystems that support all life on the planet have limits and that they are under considerable threat now.

Our comments are organized as per the “Key areas of interest” presented by Yukon government in the discussion document.

A Note on Green Economy, Green Society, and Circular Economy

The term *green economy* is widely used yet is often loosely defined. The Discussion Document released by Yukon government for this consultation touches on a few terms including *resource efficient*, *low carbon*, and *resilient*. The United Nations Environment Programme (UNEP), defines a green economy as:

One that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. It is low carbon, resource efficient, and socially inclusive.³

The Green Economy Coalition defines it succinctly as follows:

A green economy is an economy that provides prosperity for all within the ecological limits of the planet.⁴

It is of note that social equity, inclusiveness, and prosperity for **ALL** are important aspects in each definition. In the context of global climate change, this means aggressive GHG reduction efforts not just for betterment of Yukoners, but to minimize the devastation that climate change will bring to developing countries in coming decades.

Both definitions include elements of social equity and ecology, both of which are missing from Yukon government’s key words. The term *green society* can be used in place of *green economy* to help us expand our thinking beyond economics and into the daily lives of normal people. Improving efficiency and switching to clean energy sources are absolutely critical steps, but there is much more that can be done to create a future that is equitable, prosperous, and ecologically sustainable.

From the second definition of *green economy* above, the words “within the ecological limits of the planet” bring us to the concept of a *circular economy*. Being resource efficient is an important and positive goal, yet achieving a truly sustainable society on a finite planet requires not just efficiency, but also a departure from the traditional make, use, dispose model. A circular economy is one that is

² <http://www.worldometers.info/world-population/population-by-country/>

³ <https://sustainabledevelopment.un.org/index.php?menu=1446>

⁴ <https://www.greenecomonycoalition.org/news-analysis/the-green-economy-a-primer>



“restorative and regenerative by design”⁵, and thus does not require the perpetual extraction of additional non-renewable resources. Circular economies rely on renewable energy, cradle-to-cradle design⁶, reuse, and recycling. For a *green economy* to function “within the ecological limits of the planet” it must simultaneously be a *circular economy* that doesn’t require endless resource extraction. Thus the green economy and circular economy are fundamentally linked and YCS implores the Yukon government to expand its thinking on green economy to include circular economic concepts, as well as the idea of a green society.

General Recommendations for a Sustainable Green Society

Yukon has abundant renewable and sustainable energy sources in the sun, wind, water, and forests of our territory. These resources are key to eliminating our reliance on fossil fuels. It is also critical for us to accept that we cannot continue with ‘business as usual’. We must use our resources much more efficiently. Invest in energy and resource conservation. Strive to transition to a sustainable economic model and a sustainable society. The Yukon government has a critical role to play in this transition and must lead by example as well as implement forward-thinking policy and programs to help Yukoners make more sustainable choices.

The most recent report from the United Nations Intergovernmental Panel on Climate Change (IPCC) provides significant information that must be foundational for any legitimate government action to mitigate climate change. It first states that limiting warming to 1.5°C is substantially better than allowing warming of even 2°C.

Climate models project robust differences in regional climate characteristics between present-day and global warming of 1.5°C, and between 1.5°C and 2°. These differences include increases in: mean temperature in most land and ocean regions (*high confidence*), hot extremes in most inhabited regions (*high confidence*), heavy precipitation in several regions (*medium confidence*), and the probability of drought and precipitation deficits in some regions (*medium confidence*).⁷

The report also provides a guideline for how emissions must be reduced to achieve a 1.5°C future.

In model pathways with no or limited overshoot of 1.5°C, global net anthropogenic CO₂ emissions decline by about 45% from 2010 levels by 2030 (40–60% interquartile range), reaching net zero around 2050 (2045–2055 interquartile range).

In other words, global emissions must decline by 45% from 2010 levels by 2030, and reach net zero by 2050 to limit global temperature rise to 1.5°C.⁸ In November of 2018, the European Union committed to

⁵ <https://www.ellenmacarthurfoundation.org/circular-economy/concept>

⁶ Cradle-to-cradle design mimics natural processes by ensuring that all aspects of a product are reusable or recyclable and thus the product never ends up generating waste. More information at: <https://www.epea.com/>

⁷ IPCC Special Report: Global Warming of 1.5°C, <https://www.ipcc.ch/sr15/chapter/summary-for-policy-makers/>

⁸ Ibid



carbon neutrality by 2050, aligning themselves with the IPCC's research.⁹ Yukon government must commit to the same target and establish ourselves as part of the global solution.

The following are general recommendations that YCS sees as imperative to the shift to a green economy and green society.

- 1. Commit to reducing territory wide GHG emissions by 50% by 2030 and 100% by 2050.¹⁰ Monitor GHG reduction efforts of leading jurisdictions around the world, and commit to being a global leader.**
- 2. Require all new mines to contribute new clean energy infrastructure to Yukon or finance energy efficiency and conservation initiatives that have lifetime GHG emissions reductions equal to the mine's lifetime emissions.¹¹**
- 3. Set measurable targets for GHG reductions within Yukon government's operations to match or exceed the territorial goals stated above in Recommendation 1.**
- 4. Commit to landscape-scale conservation planning to guide human development toward an ecologically sustainable green economy.**
- 5. Commit to recognizing ecosystem services as critical aspects of a green economy. An example is the water treatment and carbon sequestration provided by wetlands.**
- 6. Support Yukon's shift to a zero-waste, circular economy through education programs and incentives for people and industry to reduce waste.**

The interconnection between Electricity, Heating, and Transportation

Although Electricity, Heating, and Transportation are presented separately in the consultation documents, the Yukon Conservation Society would like to stress that these sectors are inextricably linked. There are only a few options for meeting or reducing energy demand in Yukon:¹²

- Energy conservation and efficiency
- Renewable heat (solar, biomass and geothermal)
- Renewable electricity (wind, solar, hydro, biomass, geothermal)
- Fossil Fuels

⁹ https://ec.europa.eu/clima/policies/strategies/2050_en

¹⁰ These targets are consistent with the European Union's most recent climate targets (https://ec.europa.eu/clima/policies/strategies/2050_en) and with the IPCC's 2018 Special Report: Global Warming of 1.5°C. (<https://www.ipcc.ch/sr15/>)

¹¹ This strategy is proposed as an option to achieve carbon neutrality in our mining industry, recognizing that a few mines can have a major impact on Yukon's total GHG emissions. It also provides an incentive for mines to reduce GHG's on site.

¹² YCS recognizes that there are other energy sources such as nuclear and tidal, but for the purposes of this document we feel that the options listed are the most realistic and readily available.



If we are to stop using fossil fuels for a specific task we must apply conservation and efficiency measures to reduce the total energy demand and then replace the remaining energy with renewable electricity or heat. Energy conservation should always be the first approach – regardless of the energy source – but to move to a truly low carbon economy, fuel switching is absolutely required. Thus, making impactful reductions to our use of fossil fuels will require making investments in low impact renewable electricity and biomass energy.

Electricity

Mission Statement: Collaborate with Yukon Energy, First Nations, and the federal government to plan and fund the additional clean energy generation infrastructure required to shift Yukon off of fossil fuels.

The heating sector is ready for a rapid transition away from fossil fuels, and much of this energy should be replaced with electricity. The transportation sector is on the brink of a massive industry disruption from electric vehicles (EVs), and within the lifetime of the CCEGE Strategy EV's will almost certainly become more economical than gasoline and diesel vehicles. Our electrical system must be bolstered to prepare for and accelerate this transition. 'Local, low-impact, diversified, and renewable' must be the guiding principles for new electricity developments. Energy conservation initiatives and intelligent demand side management (DSM) are critical to enabling this transition, as is the deployment of mature, proven energy storage systems.

The following are specific recommendations that YCS sees as critical to creating a sustainable future powered by clean electricity.

[Direct the YUB to consider the environment and climate change](#)

Yukon Energy and ATCO Electric Yukon are regulated by the Yukon Utilities Board (YUB). The YUB has a narrow mandate that requires the electrical utilities to justify all projects and expenditures in purely financial terms. The YUB does not consider local environmental impacts or GHG emissions in their assessment of utility initiatives. This makes DSM programs very challenging for the utilities to justify and is unacceptable considering Yukon government's commitment to renewable energy. As a reminder of this commitment, the goals in the Premier's mandate letter to Minister Ranj Pillai include:

Increase the availability of renewable energy solutions, while reducing the reliance on non-renewable sources and lessening energy consumption by:

- Developing energy policies and programs that meet future needs from renewable sources.¹³

Yukon's Public Utilities Act simply does not contain any form of the words *renewable*, *environment* nor any related terms. The current operation of the YUB is utterly inconsistent with both the spirit and letter of Yukon government's commitments to a clean energy future. Changing the function of this regulator is

¹³ https://yukon.ca/sites/yukon.ca/files/eco/eco-mandate-ranj-pillai_en.pdf



one of the most impactful actions that Yukon government could take to prepare Yukon for a long-term shift to a low carbon and low-impact energy future.

- 7. YCS recommends that Yukon government direct the YUB to consider environmental and social impacts of electricity projects along with the financial aspects. This may be through amendment of the Public Utilities Act or via an Order In Council.**

Collaborate with utilities and communities to develop energy storage

Energy storage is a critical piece of a low-carbon electrical grid and is vital to increasing the penetration of intermittent renewables (wind and solar). Energy storage systems can be either behind the meter or utility-scale, and YCS recognizes both as valuable. Our research indicates that Electric Thermal Storage (ETS) is the most appropriate, affordable, and mature behind-the-meter energy storage technology currently available. This technology can provide economic benefits to rate-payers, tax-payers, and the utilities by trimming daily electrical demand peaks.

- 8. YCS recommends that Yukon government increase its support for behind-the-meter energy storage systems by providing financial incentives to electricity customers, collaboration on a pilot program with YEC and YDC, and direct mandates to YDC and the Yukon Utilities Board (YUB).**

Utility-scale storage can also be valuable and should be considered in particular as a lower cost, lower impact alternative to building a transmission line to British Columbia. The Yukon Conservation Society has performed significant research demonstrating that a pumped hydro storage facility would provide a similar service as a transmission line interconnection, at approximately 15% of the cost, and with a fraction of the geographical footprint. The energy storage facility would also bolster the economics for local wind and solar projects, rather than hinder them as the interconnection would do.

- 9. YCS recommends that Yukon government immediately halt its investigation of a transmission line to BC and instead focus on a pumped hydro storage facility to remedy our seasonal energy disparity.**

Prepare the electrical system for fuel switching

Yukon's electrical grid must take a primary role in reducing GHGs from the space heating sector. Unlike transportation, where going electric introduces some technical challenges, electric heating technology is well established and directly competitive with fossil fuel space heating. Without any government support or incentives, electric heating has become ubiquitous in all new residential construction in Yukon.¹⁴ Rather than seeing this as a challenge for the electricity sector, we must view it as an opportunity. Energy conservation, demand side management, energy storage, and deployment of intermittent renewables are the keys to a sustainable electricity grid for the future, and Yukon government must play a significant role in directing and supporting our electrical utilities to make the necessary changes and upgrades.

¹⁴ <http://www.energy.gov.yk.ca/pdf/Shifting-Demand-in-Yukon-Heating.pdf>



- 10. YCS recommends that Yukon government set goals for clean electricity supply (and storage) growth that coincide with goals for energy conservation, electric transportation, replacement of fossil fuels with electric heat, and aggressive demand side management.**

Heating

Mission Statement: Eliminate the use of fossil fuels for heating in grid-connected Yukon communities to reduce Yukon’s total GHG emissions by nearly 18%.

Market forces have already shifted nearly all new home heating installations in Whitehorse from fossil fuels to electric. Electric heating technology is readily available, economically competitive with fuel heating, and creates a path towards a clean energy future. Space heating is responsible for 18% of Yukon’s GHG emissions and nearly 100% of this energy can and should be replaced with a combination of energy conservation, efficiency upgrades, and electric or biomass heating systems. Yukon government has a major role to play in educating and incentivizing Yukoners to reduce their energy use and switch to low carbon heating. Government of Yukon also has a role in supporting the utilities to ensure that the additional electricity sources are sustainable, low carbon, and environmentally responsible.

The Energy Branch (Energy Solutions Centre) has outstanding programs to support energy retrofits and upgrades, but these programs can and should be expanded to reach the commercial sector, renters, and lower-income Yukoners who can’t afford the capital expenses of major energy retrofits. A percentage funds from the upcoming carbon tax would be well spent if used to enhance these types of programs to help Yukoners reduce their costs and climate footprint. Yukon government must also look to our neighbours in BC and learn from their new “Clean BC” plan which includes a building code that strengthens over time.¹⁵

By simultaneously reducing our heating energy requirements and shifting from fossil fuels to clean alternatives, Yukon can massively reduce our GHG emissions while becoming more self-sufficient and keeping money within the Yukon economy rather than exporting our dollars to import fossil fuels.

The following are specific recommendations that YCS sees as critical to heating Yukon homes and businesses sustainably.

[Yukon government to eliminate the use of fossil fuels for heating its buildings](#)

Yukon government should immediately introduce policy banning the selection and installation of fossil fuel heating systems in any territorial government buildings. Electric heating options (heat pumps, resistive, and ETS) are readily available and provide a path to a clean energy future. Biomass and geothermal are valid options. Yukon government has a responsibility to lead by example, and under no circumstances should oil or propane heat be considered an acceptable choice for a government conscious of climate change and supporting a ‘Green Economy’.

¹⁵ https://www2.gov.bc.ca/assets/gov/farming-natural-resources-and-industry/construction-industry/building-codes-and-standards/guides/bcenergystepcode_guide_v1.pdf



- 11. YCS recommends that Yukon government implement policy banning the selection and installation of fossil fuel heating systems in all territorial government buildings. This should apply to new buildings as well as retrofits and upgrades.**

Expand Property Assessed Clean Energy (PACE) financing model for energy efficiency upgrades and low carbon heating technology in Yukon municipalities

The PACE model has been used very successfully in Yukon as part of the Rural Electrification and Telecommunications Program (RETP). This model currently allows rural property owners to finance clean energy generation projects with \$0 down and low interest repayments tied to the annual property tax bill. This financing model can and should be expanded to support insulation and energy efficiency upgrades, as well as low-carbon heating systems (heat pumps are a prime example). In most cases the financial savings on reduced energy consumption more than make up the annual loan repayment, so there is an immediate financial gain for the property owner without having to invest significant capital. This program must also be expanded into Yukon municipalities where the majority of our population lives. It is of note that the PACE model is key to tackling energy efficiency in the rental market, where renters typically pay the heating bill so the landlord has no incentive to upgrade the building. By enabling \$0 down upgrades, the owner can pass on the loan cost to the renters, and the renters will still save money overall due to reduced heating bills.

- 12. YCS recommends that Yukon government expand its use of the PACE model to enable all property owners in Yukon access to \$0 down financing to install clean energy systems, upgrade their building envelopes, and install non-fossil fuel heating systems.**

Introduce mandatory Energy Performance Certificates (EPCs)

Energy Performance Certificates (EPCs) have been used successfully in many jurisdictions¹⁶ to enable potential renters and buyers to accurately anticipate and compare the energy costs associated with buildings. These certificates compile information collected during energy audits and present it clearly for the public to understand. By making this information available, it allows people and businesses to accurately predict their energy costs, and thus make better decisions about which property is more affordable to rent or own. Simply by making this information available, the real estate market will shift towards more efficient structures. When paired with the availability of PACE financing for energy upgrades, the owners of low-efficiency buildings can improve their buildings to stay competitive without the financial burden of major capital investment.

- 13. YCS recommends that Yukon government implement a mandatory Energy Performance Certificate (EPC) program whereby the energy performance of a building is captured on an EPC document and must be made available to any potential renter or purchaser.**

Transportation

Mission Statement: Invest in Yukon's transportation system to shift our territory to low carbon transportation methods.

¹⁶ EPCs are mandatory in the United Kingdom, and are common practice throughout Europe.



Transportation accounts for 62% of Yukon’s GHG emissions. Installing electric charging stations in our communities and highways opens the door to long–distance electric vehicle travel throughout Yukon. Densification of our municipalities promotes commuting on foot and bicycle. Ride-sharing services and improved transit provide alternatives to driving. These are all aspects of the shift to a green society, one that is less impactful on the world around us. Low carbon alternatives (such as transit) must be made more affordable than the polluting option (driving) to stimulate broader uptake. Yukon government must make strategic investments in these areas to reduce our consumption of fossil fuels by fuel switching (Electric Vehicles) and energy conservation (transit, walking, and biking). It is of note that semi-trucks are major GHG emitters, and strategies to electrify or otherwise reduce emissions from the trucking industry are an important aspect.

The following are specific recommendations that YCS sees as critical to creating a sustainable future for transportation in Yukon.

[Invest in level 3 charging stations for electric vehicles](#)

The availability of fast chargers for electric vehicles are key to enabling long distance EV transportation. As the EV industry develops, it is Yukon government’s responsibility to provide the initial infrastructure to enable the use of EVs between communities. The range of electric vehicles is improving every year, with many vehicles already achieving 350-500km of range, making inter-community electric transportation a very practical reality once level 3 charging stations are available.

- 14. YCS recommends that Yukon government invest in level 3 charging stations for Electric Vehicles (EVs) to allow electric transportation between Yukon communities.**

[Create incentives for individuals and businesses to invest in electric vehicles](#)

- 15. YCS recommends that Yukon government provide grants or other financial support for Yukoners and businesses to invest in new and used electric vehicles.**

Land and Resources

Mission Statement: Implement landscape-scale conservation planning to ensure species connectivity across the landscape.

Yukon is renowned for its vast and wild landscapes. A land of unspoiled beauty and intact environments. These traits are far from guaranteed however, and we must learn from the experiences of our southern neighbours. Not so long ago, northeastern BC was similarly wild, yet it is now pockmarked and crisscrossed with the drill pads and roads of oil and gas development. Yukon has an abundance of one of the earth’s scarcest resources: wild land. We must work to protect this legacy for future generations. To implement effective protection, we need to plan on a landscape scale and fully understand ecosystem functions such as natural forest renewal.

To move towards a green economy, we must drastically reduce our reliance on fossil fuels. Along with that we must accept that some fossil fuels will be left in the ground. We must also move away from a linear, extractive economy towards a circular economy that reduces and finds uses for waste materials.



There will be challenges as we make this transition but future generations depend on us to take steps now towards a more sustainable future.

Commit to Landscape-Scale Conservation Planning

- 16. YCS recommends that the Yukon government commit to landscape-scale conservation planning across Yukon that minimizes linear disturbances and increases species connectivity and community resiliency.**

Understand the value of the land

- 17. YCS recommends that Yukon government prioritize and invest in understanding the value of the land (ecological, traditional, spiritual, socio-cultural, and economic) and ensure that the significance of different values is considered in planning for a circular economy and a green society.**

Create networks of well-connected protected areas

- 18. YCS recommends that Yukon government fund and create networks of well-connected protected areas and Other Effective Conservation Measures (OECMs) that contain climate change refugia.**

Use adaptive management to better understand climate impacts on Yukon species

- 19. YCS recommends that Yukon government prioritize and invest in the development of adaptive management tools, disseminate them and apply them to better understand and accommodate species range shifts in the face of climate change.**

Ban oil and gas exploration and development in Yukon

As Yukon transitions away from fossil fuels, it would be utterly unethical to continue to support an industry that is known to be causing a global catastrophe. Yukon's thriving economy in the absence of a fossil fuel industry demonstrates that the industry isn't needed. The impacts of climate change in Yukon are significant, but they pale in comparison to the human suffering that climate change will cause around the globe. The International Organization on Migration estimates that up to **200 million people** could be displaced by climate change by 2050¹⁷. The only morally acceptable action is to ban fossil fuel extraction in Yukon and focus our efforts on finding alternative energy sources.

- 20. YCS recommends that Yukon government implement a permanent ban on fracking and other fossil fuel development throughout Yukon.**

Modernize mining royalties to support green economy initiatives

Quartz mining royalties must be tied to the amount of product extracted (Net Smelter Return) rather than tied to the company's profits as they are now. Net Smelter Return is common around the globe and mining companies are familiar with this royalty system. Placer mining royalties are well known to be woefully out of date in Yukon. The royalty structure is based on an assumed gold price of \$15 per ounce, which was accurate in the early 1900s. Today's gold prices are around \$1600 per ounce, over 100 times

¹⁷ <https://friendsoftheearth.uk/climate-change/climate-refugees>

higher. Most placer mining currently takes place on the traditional territory of the Tr'ondëk Hwëch'in First Nation, and yet the First Nation received a grand total of about \$65 in placer mining royalties in 2017.¹⁸ Yukon has a long history of placer mining, but we must acknowledge that it is one of our most environmentally impactful industries. The money raised from the modernized royalties could be used to support a range of green economy initiatives.

- 21. YCS Recommends that Yukon government modernize mining royalties, being sure to fairly include affected First Nations in the agreement, and use the raised funds to support our transition to a green economy.**

Communities

Mission Statement: Invest in resiliency and adaptation measures to ensure that Yukon communities can continue to thrive while supporting local, sustainable, low-carbon community-based initiatives.

For Yukon communities, resiliency and adaptation to a changing climate are of utmost importance. Melting permafrost, changing precipitation patterns, and increased forest fire risk will all have impacts on Yukon's communities. Alongside adaptation, a green economy transition means the development of local, sustainable industries and reduced reliance on imported fuels and products.

The following are specific recommendations that YCS sees as critical to creating a sustainable future for Yukon communities.

[Build on the FireSmart program to increase wildfire safety](#)

- 22. YCS recommends that a more comprehensive wildfire risk management program, taking into account species habitat requirements and landscape connectivity, be implemented to reduce wildfire risk in Yukon communities and create opportunities for sustainable wood harvest.**

[Support and reduce barriers for local food production](#)

Producing food locally has many benefits to Yukon including local employment, reduced GHGs from transportation, food security, and community resiliency. Educating the public about the real cost of food production will encourage more local support. All of these are relevant to the CCEGE Strategy, and thus finding opportunities to support local food production should be a key aspect of the strategy. This may take the form of subsidies, reduction of regulatory barriers, promotion and support for urban farms, or other initiatives. In this effort, it is paramount that Yukon government ensure that it promotes sustainable small farms rather than factory farming and monoculture mentality.

- 23. YCS recommends that Yukon government provide incentives for sustainable local food production and seek out opportunities to reduce our reliance on imported food.**

[Help communities transition away from diesel](#)

The transition away from diesel includes both the generation of electricity and the use of home heating fuel. Solar and wind electricity projects throughout the territory are demonstrating how we can reduce reliance on diesel for electricity, and the Teslin Biomass Project is an excellent example of eliminating

¹⁸ <https://thenarwhal.ca/gold-seekers-flooding-yukon-wreaking-havoc-rivers/>



fossil fuels with biomass heat. Viable solutions exist, and Yukon government should enable proponents through a combination of funding, barrier reduction, and connection to relevant expertise. Improving the energy efficiency of homes and buildings is also a major opportunity that has been largely untapped outside of Whitehorse. Resources must be dedicated to the communities to help residents reduce their heating costs without requiring major upfront expenses. Property assessed financing (as discussed under the “Heating” section) could be a useful enabling mechanism.

- 24. YCS recommends that Yukon government actively engage with communities and First Nations to help them transition away from diesel by improving efficiency of buildings and generating electricity from low-impact renewable energy sources.**

Skills and Innovation

Mission Statement: Transition from a linear extractive economy to a circular economy by providing skills training and supporting innovation in sustainable industries.

Yukon has a history of mining and resource extraction, but that does not commit us to a similar future. Rather, the realities of anthropogenic climate change and global environmental degradation require that we improve our economic model to remain prosperous into the future. The recently opened Innovation Hub in Whitehorse is an excellent example of how government can support innovation and alternative skills in Yukon, and YCS encourages Yukon government to continue down this path. Skills training for industries such as local agriculture, energy efficient construction, and renewable energy could all help Yukoners find work in non-extractive industries. Focusing on waste diversion and recycling could greatly improve our utilization of resources.

The following are specific recommendations that YCS sees as critical to creating an innovative and sustainable future for Yukon.

[Develop a strategy to reduce construction waste](#)

Waste reduction and diversion are important aspects of creating a thriving green economy. Construction waste is an example of a group of materials that are regularly landfilled despite having significant potential for reuse. While recycling is always encouraged, the direct reuse of construction materials such as insulation, lumber cutoffs, shingles, and drywall is much more efficient than sending these materials out for recycling. These materials should be sorted and made available to Yukoners at reduced rates. Habitat for Humanity’s ReStore model is a prime example of the potential to reuse construction materials. Yukon government should implement regulations and/or incentives for contractors to sort their waste and ensure that this material makes it back into the market for reuse.

- 25. YCS recommends that Yukon government (in collaboration with municipalities if appropriate) implement a construction waste diversion program to incentivize the sorting of construction waste for reuse.**

[Expand designated materials program and implement Extended Producer Responsibility](#)

YCS applauds the recent improvements and addition of e-waste to the Designated Materials Regulation, but also recognizes that Yukon still lags far behind other jurisdictions and has much work to do to



become a respected participant in the shift to a green economy. The recycling fee on aluminum cans is an excellent example of the positive impact that recycling programs can have. Whitehorse's Raven Recycling employs approximately 30 people and one of their largest revenue streams is the recycling charges applied to aluminum cans.¹⁹ This small surcharge was a key enabler for local employment and waste diversion simultaneously. Similar programs can and should be introduced so that the costs of recycling are born by consumers and producers rather than taxpayers and the environment. The recent report from the (Yukon) Ministerial Committee on Solid Waste provides some good initial recommendations for action. One of these recommendations was to examine and report on the feasibility of Extended Producer Responsibility (EPR) in Yukon. This was stated as a short-term objective to be completed in 2018; YCS hopes that Yukon government is committed to pursuing this objective. EPR is a critical instrument for guiding industry towards more sustainable product design and recycling practices. YCS suggests that Yukon government seriously explore joining British Columbia's cutting-edge EPR program, rather than trying to reinvent the wheel ourselves.

26. YCS recommends that Yukon government aggressively expand the designated materials recycling program and implement Extended Producer Responsibility (or join British Columbia's program) to move us closer to a sustainable zero waste society.

Knowledge

Mission Statement: The Climate Change, Energy, and Green Economy Strategy must set measurable, time-bound goals and Yukon government must incorporate local, traditional, and scientific knowledge to assess and reduce human impacts through an ecosystem based management approach.

As our climate and environment changes rapidly around us and we strive to adapt and mitigate our human impacts, it is critical that knowledge of all forms be shared and valued. Humans are changing the world around us and no one has all the answers. Openness, transparency, and the courage to work together are critical not just for Yukon, but for the health and prosperity of humanity and all life on earth. We must think outside the box. Challenge the status quo. Face the tough issues head on and consider all forms of knowledge in our quest for solutions. Yukon government has a responsibility to lead by example through collaboration with First Nations, public-private partnerships, and transparency with the public at large. An important part of this is setting measurable, time-bound goals and being upfront and honest with the public about the progress being made.

The following are specific recommendations that YCS sees as critical to ensuring that the integrated strategy is robust and that Indigenous knowledge is valued when studying human impacts and the world around us.

Time-bound, measureable objectives.

27. YCS recommends that all objectives and commitments in the Climate Change, Energy, and Green Economy Strategy be measurable, budgeted, and time-bound with progress tracked and publicly available.

¹⁹ From personal communication with Joy Snyder, Executive Director with Raven Recycling.



Financial reserve set aside to support objectives that fall behind schedule

- 28. YCS recommends that Yukon government maintain a monetary ‘climate reserve’ to be able to fund initiatives as needed to ensure that GHG reduction targets are met.**

Expand knowledge sharing with First Nations and support engagement with ‘citizen scientists’

- 29. YCS recommends that Yukon government increase use of local and Indigenous knowledge alongside scientific knowledge as we work towards a sustainable circular economy and green society.**

Conclusion

Yukon government’s Climate Change, Energy, and Green Economy Strategy has the potential to become a pivotal document to guide our territory toward a thriving and ecologically sustainable future. The Yukon Conservation Society believes that the above recommendations are necessary actions or highly valuable tools to leave fossil fuels behind and move decisively toward a sustainable society in Yukon. We draw your attention to BC’s recent climate action plan, as well as major commitments from the European Union this November towards a zero carbon future by 2050.²⁰ Yukon government has an opportunity to meet and exceed these commitments through bold leadership and political will. Separate from GHG emissions, a green economy also requires that we move away from the linear economic model of extract, use, dispose; we instead must adopt a circular economy where ‘waste’ is no longer part of the vocabulary. Through these changes, fundamental shifts in how society understands the role of the economy will occur. We live on a finite planet and thus must respect ecological limits and plan our developments on a landscape scale.

The Yukon Conservation Society believes that the following three broad elements must be focal points of the strategy:

- **Supporting and accelerating the transition from fossil fuels to low carbon energy sources**

These efforts must be consistent with the latest climate research from the IPCC and other climate experts. Both the European Union and the Province of British Columbia have released ambitious plans in 2018 to combat climate change. Let us join their effort as bold leaders. There are myriad options to tackle GHG emissions. Set ambitious goals and timelines, select initiatives that can meet those goals, and budget for them appropriately.

- **Create a clean, efficient energy system**

Implement intelligent tools to accelerate efforts on energy efficiency. Support the development of small-scale renewable energy systems. Understand that heating, electricity, and transportation are interconnected; a major shift from fossil fuels in one sector will require planning and action in another.

²⁰ https://ec.europa.eu/clima/policies/strategies/2050_en



Support local, community-based energy systems, not by building a transmission 'lifeline' to BC, but by enabling local proponents and energy independence.

- **Keep Yukon wild**

The Yukon's land, water and wildlife are unique, and a green society must exist within ecosystem limits as well as carbon limits. Commit to landscape-scale conservation planning to preserve our wild places while we move away from boom-and-bust resource extraction towards a more sustainable economic model. Support the shift to a circular economy that keeps resources in use as long as possible through programs and incentives for people and industry to reduce waste.

Thank you for taking the time to read and consider our comments. We have invested significant effort in researching and preparing this document and hope for the opportunity to discuss our recommendations further with you. We would be pleased to dig deeper into any questions you may have.

Thank you to the Government of Yukon for initiating this discussion. We look forward to being part of the discussion as the Climate Change, Energy and Green Economy Strategy takes shape.

Cody Reaume, EIT
Energy Analyst
Yukon Conservation Society

Mike Walton, PhD
Executive Director
Yukon Conservation Society