CLIMATE SHOT 2030

Recommendations on how to reduce Yukon's greenhouse gas emissions by 45% by 2030

Submitted by
Yukon Climate Leadership Council
to
Government of Yukon Ministers of Environment and **Energy, Mines and Resources**

SEPTEMBER 2022

Dear Ministers Clarke and Streicker,

As the leaves begin to change colour and fall approaches, we are concluding our work together. We are pleased to submit this final report for your review and due consideration.

We were honoured to be chosen by your government to represent all Yukoners in identifying potential ways to reduce the territory's greenhouse gas emissions by 45% by 2030. This escalation of climate action commitment – 45% compared to the 30% reduction set out in *Our Clean Future* (OCF) – poses many challenges. It also presents the opportunity to reconsider our day-to-day lives, communities, and society.

As 12 individuals with different backgrounds, ideas, and expertise, we ventured on a 9-month journey of exploring, discussing, learning, and debating to arrive at these recommendations. We worked hard to build understanding, shared many frank and open conversations, and strived throughout to understand one another's perspectives. We co-designed our process and adapted it as new insights were gained, in effect "crossing the river by feeling the stones".

During our own discussions, as well as those with other individuals and groups, we were repeatedly struck by the gravity and urgency of the situation we are in as a territory, country, and planet. The reality is that the Yukon has already exceeded the emissions targets it set only a few short years ago in OCF. This trend only widens the gap between where we are now and the 45% target ahead of us. Time too is a finite resource, and we must not waste it.

COUNCIL'S STRATEGIC LENS ON CLIMATE ACTION: KEY PRINCIPLES

1. **Individual, voluntary action isn't enough; governments must lead.**
   Behavioural change is difficult, and Yukoners need strong leadership to compel action on a broad societal challenge such as climate change. Government should take primary responsibility for achieving reductions through its actions, policies, and legislation. At the same time, it should create opportunities for individuals and other levels of government and sectors to take action.
2. **Climate action requires a wartime-like effort.**
   The climate crisis requires the wide-scale mobilization of people and governments. There isn't time to get it perfect: best efforts will need to suffice. This collective effort should inspire the same "can do" mentality that wartime efforts of the past did.
3. **A lower carbon future is a better future overall.**
   The missing "flipside" of the climate crisis is a hopeful one. A lower carbon future is one in which people have a better quality of life by virtue of connection to nature, better local resources, and richer mobility.

In crafting our recommendations, we endeavoured to be clear with our vision and provide a suite of options, or suggested actions, through which your government might achieve it. We recognize that some of these options and actions are already included in OCF and/or are initiatives currently underway. In such cases, our suggestions represent an acceleration, expansion and/or revision to these ideas. While OCF provided a starting point, we believe that meeting the 45% challenge – in effect, doing *more* - necessitates a bold rethinking of *how* government approaches climate action, as opposed to solely focusing on the actions themselves within status quo systems of governance.

Our suggested actions are accompanied by an estimate of the emissions reduction opportunity they present. These first-order calculations were undertaken in-house by Council members to inform our work together and identify the scale of the opportunity for emissions reductions associated with various actions. We share these estimates as a starting point for discussion with your government, and strongly recommend that they be reviewed by an independent third party such as Navius Research and/or other qualified entities.

We also wish to acknowledge the important work of other Yukon groups currently engaging on the climate action front, including the Yukon Youth Panel on Climate Change and Yukon First Nations Climate Action Fellowship. We encourage you to consider the engagement of Yukoners in climate action decisions on an ongoing basis, potentially following the model of the British Columbia Climate Solutions Council. Ensuring the independence of groups such as ours is important, but there is great value in the communication and understanding that flows from identifying and solving problems together.

Despite our diversity of backgrounds, we were almost always in agreement about what we wanted the Yukon of the future to look like: lower carbon, clean and healthy, equitable, rooted in local solutions, and with people living in balance with the territory's precious wilderness and natural resources. Above all else, we believe that, in meeting the 45% target, government must create opportunities for all Yukoners to benefit from the transition to a lower carbon future. We hope that this unity of vision comes across in this document and serves as a model for all Yukoners, and their governments, moving forward to meet the challenge of climate action.

Sincerely,

Kirsten Hogan (Co-Chair)

Sean Smith (Co-Chair)

on behalf of the Yukon Climate Leadership Council:

Rosa Brown
Hector Campbell
Kim Lisgo
Forest Pearson
Steve Roddick
Michael Ross
David Silas
Coral Voss

Special Acknowledgement: Council would like to express its gratitude for the wisdom and guidance provided by original Council member Margret Njootli, who had to step down partway through the process.

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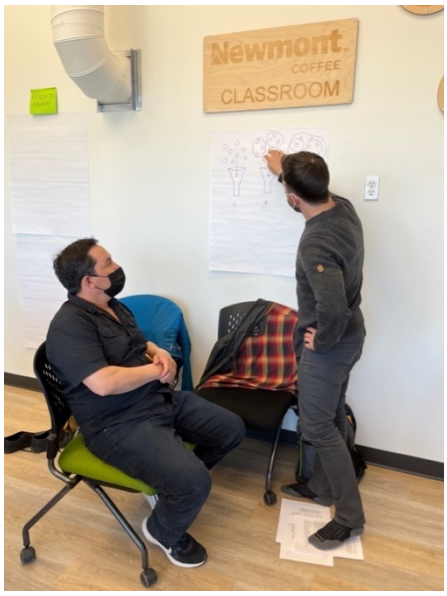

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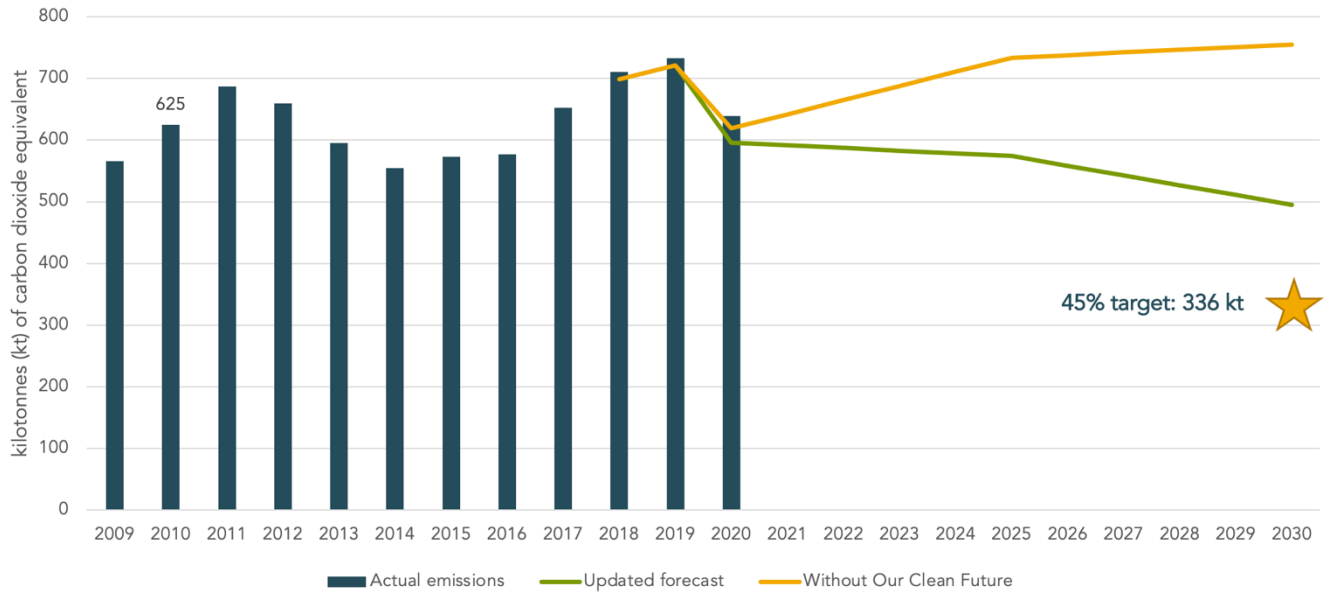
THE CHALLENGE AND OPPORTUNITY

Our Clean Future (OCF) commits to reducing the Yukon's non-mining greenhouse gas (GHG) emissions by 30% over 2010 levels to 428 kilotonnes (kt). The new 45% target represents a further drop of 92 kt, which leaves **a gap of about 160 kt** between emissions projections and the new 2030 target of 336 kt. Achieving this goal requires more than a mere scaling up of OCF: from here, the gains may be harder won and require difficult choices and prioritization that government has not yet had to tackle. While the Yukon faces many challenges in reaching this ambitious 45% target, it is also equipped with unique opportunities.



CHALLENGES

Cold climate	The Yukon's cold climate creates a heavy reliance on fossil fuels for heating and transportation.
Remoteness & small size	The Yukon's distance from centres of industry and commerce creates dependency on Outside goods and technologies.
Climate instability	Natural disasters such as wildfires, drought, flooding, and landslides will divert resources from climate action to disaster response.
Geopolitical instability	Wars, conflicts over resources, and climate-induced migration threaten to undermine global stability and access to resources.
Economic instability	Inflation and shortages of labour, supplies and critical minerals could compromise or delay the energy transition.
Biodiversity crisis	The rapid loss of species and degradation of ecosystems poses a threat to all living things, including humans. Care must be taken to not exacerbate the crisis when taking climate action.

OPPORTUNITIES

Strong influence of government	The predominant role of government, versus industry, in the local economy means that government-led action – policy, regulations, or other – could have a direct and significant impact.
First Nations involvement	The predominant role of First Nation governments in decision-making for the Yukon's lands and water mobilizes thousands of years of stewardship and land-based knowledge and values to bear on the Yukon's climate action.
Small and nimble	The Yukon is a small jurisdiction with the ability to make changes faster. This advantage positions us to be both national and global leaders in climate action.
Common purpose and unity	Climate action has the potential to engage all Yukoners. Yukoners have a close relationship to the land, and climate action holds the promise of healing broken connections to both land and one another.

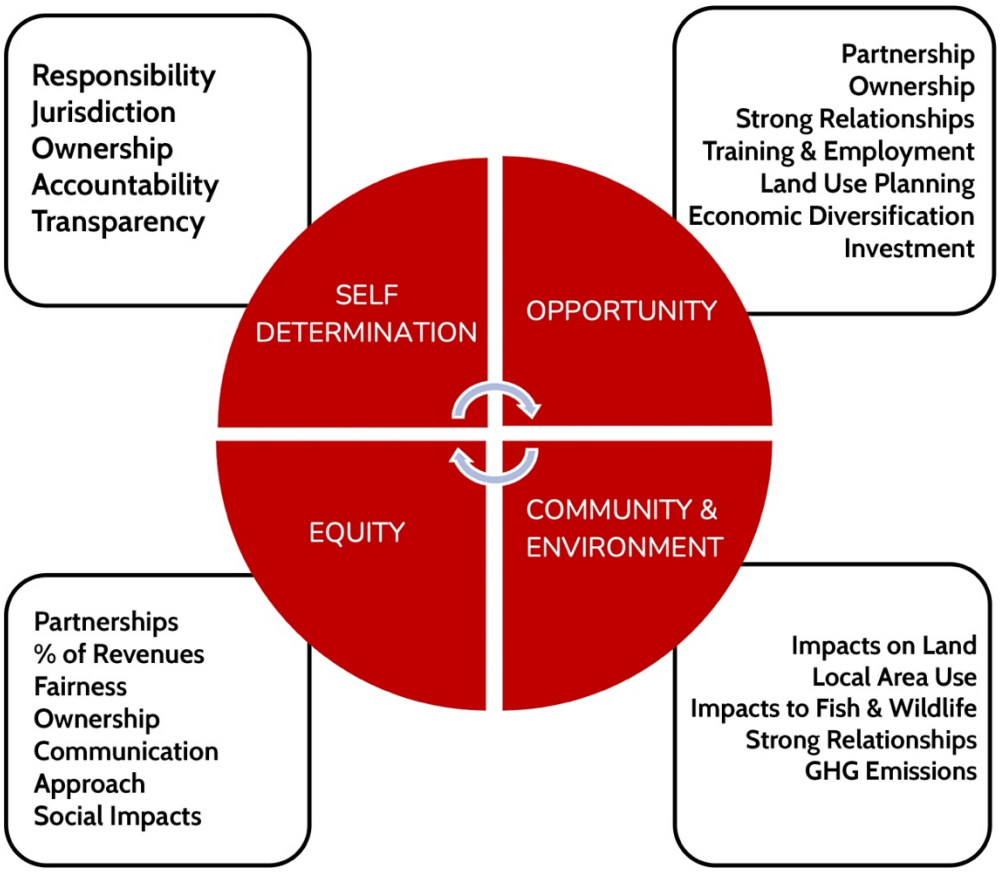
RECONCILIATION THROUGH CLIMATE ACTION

Yukon First Nation (YFN) values are founded in experience, history, and culture of living in a symbiotic relationship with the land, air, and waters that provide everything we need. This worldview lent itself to the consideration of the legacy – positive or negative - decisions might create for children and grandchildren.

Council felt that some Yukon First Nations do not see themselves reflected in *Our Clean Future*. If they cannot see themselves, they will not participate. A central objective of Council's work was to bring diverse perspectives into the climate change discussion to ensure inclusivity and connection to all Yukon people and communities. An innovative approach in this regard was the development of a Reconciliation Framework for Council to use in evaluating climate action recommendations.

To develop our framework, Council considered the key documents *Together Today for Our Children Tomorrow* (1973), *Umbrella Final Agreement* (1993), *Truth and Reconciliation Commission of Canada: Calls to Action* (2015), and the individual final and self-governing agreements of YFNs. The values outlined in these documents support the elements of basic security and well-being for all Yukon people and will help us work towards security and self-reliance in our housing, food, water, and energy systems. In simple terms, Council's Reconciliation Framework is a good starting point for identifying how the tools found in the UFA and individual agreements can be opened up and brought to life.

Our Reconciliation Framework includes four pillars drawn from these key documents. Council used these pillars to guide and evaluate our climate action recommendations to ensure that our proposed actions support reconciliation and a better future for all Yukon people.



VISION FOR THE RECONCILIATION PILLARS

Self-Determination – YFN people have the ability and resources to self-govern for the present and future of their citizens and stewardship of their lands and waters.

Opportunity - YFN people and nations can participate fully in the Yukon's economy and society.

Equity

- YFNs are decision makers for activities in their traditional territories.
- YFN people and nations are full and equal partners in decisions respecting development in their traditional territories.
- The UFA has tools for YFNs to negotiate for benefits with governments and economic entities.

Community and Environment

- The Yukon becomes more food, housing, energy, and water secure by reducing our reliance on imported goods and services.
- Decisions are centered on leaving the world better than we found it for future generations.
- Implementation of actions ensures that the integrity of natural systems is maintained.

Yukon First Nations Climate Action Fellowship

The Fellowship is a group of 13 Yukon First Nations youth tasked by Yukon First Nations Leadership to develop a Yukon First Nations approach to climate action.

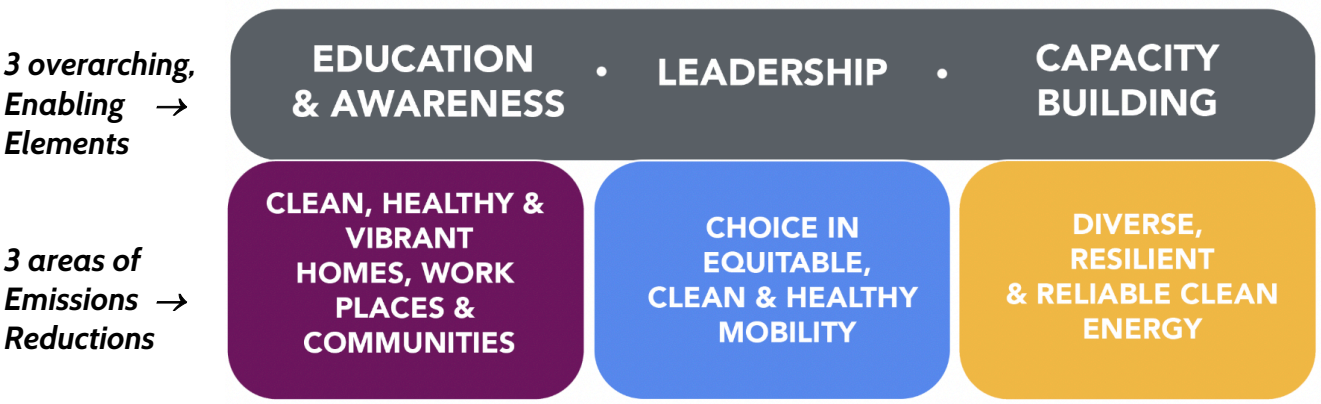
Through their work, the fellows have been exploring disconnection from self, community, culture, spirit and the land as root causes of climate change, and have been working with knowledge-holders and experts to develop a Reconnection Vision and Action Plan.

Council recognizes the leadership role of these Fellows, and the leadership of Yukon First Nations in helping all Yukoners to address the climate crisis.

OUR RECOMMENDATIONS: AN OVERVIEW

Our recommendations flow from a shared vision of the desired future and the strategic choice to provide the Government of Yukon (YG) flexibility around how the territory might get there. We organized our ideas as follows:

- Three areas of GHG Emissions Reductions; and
- Three overarching areas, the Enabling Elements, that we view as pre-requisites to effectiveness on the GHG reduction front. Without these addressed, we feel the GHG reduction areas will be seriously undermined.



We recognize YG and other partners across the territory are already committed to and/or implementing various initiatives under these areas. In some cases, our recommendations represent an acceleration, expansion and/or revision to these initiatives – going *further, faster, or deeper*.

OUR CLEAN FUTURE: REFLECTIONS AND OBSERVATIONS

Council had the opportunity to discuss and reflect on *Our Clean Future* (OCF) during its time together. We offer some of the following insights into barriers that OCF and/or YG's activities on the climate front posed to our work:

Lack of clarity around "Net-Zero" and vision for 2050

OCF has a vision statement and 2050 goal of net zero. However, the Yukon does not yet have an agreed-upon definition for "net-zero" nor details of what this might look like. Without that detail, we are missing out on the opportunity to tailor 2030 solutions to arrive purposefully to net zero in 2050. Instead, Council tried to ensure their recommendations to 2030 did not have a negative or deferring effect on achieving net-zero by 2050.

Exclusion of land use underestimates the Yukon's GHG emissions

The Yukon does not include land use (and other disturbances) in GHG emissions accounting. Forests, soils, and wetlands, in particular, play a vital role in storing significant amounts of carbon. When these areas are disturbed by humans, wildfire, and/or permafrost thaw, stored carbon is released into the atmosphere. For wetlands, it can take centuries to recover the carbon lost due to disturbance.

RECOMMENDATIONS TO ENABLE CLIMATE ACTION

LEADERSHIP

There are barriers and silos within and between the Yukon's governments and institutions that limit innovative climate action. While new and ambitious projects, programs and initiatives are important, they cannot be realized at the speed and scale required to effectively address the climate crisis if governments and institutions are not up to the task.

In this context, it is critical that YG makes transformative change internally to prioritize climate action in the planning and operation of services provided to Yukon people. We recommend that YG:

Explicitly factor carbon emissions into budgeting and decision-making.

To advance this recommendation, YG could:

L1. Report estimated emissions impacts for all major financial expenditures, including in the territorial budget, and whenever GDP is reported; and

L2. Require that an internal cost of carbon (recommended at $250-$400/tonne) be included in all financial and budgeting decisions, including projects funded by YG and Crown Corporations.

Position climate change at the centre of government decision-making structures and processes.

To advance this recommendation, YG could:

L3. Move the climate change portfolio from a line department to a central department (such as Executive Council Office or Department of Finance) to streamline climate policy implementation;

L4. Require that GHG emissions impacts be explicitly included in all decision-making documents presented to Assistant Deputy Ministers, Deputy Ministers, and Cabinet;

L5. Assign responsibility for emission reduction by sector to specific YG departments (e.g., Highways and Public Works for transportation sector emission reductions). Require YG ministers to issue an annual statement on progress towards meeting their sectors' emission reduction goals;

L6. Explicitly link the performance goals of senior government and Crown Corporation officials to emission reduction targets;

L7. Work with all levels of government to develop and support the use of standardized GHG emission accounting practices that support consistent, simple and transparent reporting of emission reductions; and

L8. Ensure annual OCF reporting reflects on vision, guiding statements, and the *Umbrella Final Agreement* and *Together Today for Our Children Tomorrow* and reflects the Yukon's urban-rural context; and

CAPACITY BUILDING

Implementing effective climate actions requires skills, knowledge, and resources across sectors and in every Yukon community. To accelerate and increase the Yukon's climate emissions reductions, a concerted effort will be required to make better use of existing capacity - both within and outside government - and to develop additional capacity.

To increase the Yukon's capacity to develop and implement innovative climate action, we recommend that YG:

Build capacity within and across governments and organizations to reduce emissions.

To advance this recommendation, YG could:

C1. Require all YG and Crown Corporation senior managers to complete a course in decision-making for climate change;

C2. Identify core skills and knowledge, conduct audit of YG workforce, and reassign relevant staff to support emissions reduction initiatives;

C3. In collaboration with First Nation governments and unincorporated communities, develop community-based emissions reductions strategies that are owned by communities; and

C4. Fund additional capacity to enable Yukon regional organizations (e.g., AYC, CYFN) to better support the acceleration of local GHG reduction projects and programs.

Develop new tools and systems to ensure all Yukon people can participate in climate action.

To advance this recommendation, YG could:

C5. Allocate revenues collected from carbon pricing greater than $50/tonne to fund GHG reduction projects and provide targeted support for vulnerable sectors and populations;

C6. Replace fossil fuel subsidies (e.g., exemptions under the Fuel Taxation Act, carbon levy exemptions, etc.) with targeted support for exposed industries that reduce their vulnerability and dependence on fossil fuels; and

C7. Provide energy rebates to offset energy cost impact on low-income families.

Encourage and reward emissions reductions and innovation.

To advance this recommendation, YG could:

C8. Creating a grant or prize for projects that produce substantial emissions reductions;

C9. Using a portion of carbon tax proceeds to establish a business incentive fund for private sector low-carbon projects; and

C10. Using annual Association of Yukon Communities conferences to inspire community low carbon challenges.

EDUCATION AND AWARENESS

For Yukoners to embrace the lower-carbon lifestyles that are necessary to achieve accelerated emission reductions, it is critical that they understand not only the importance of tackling the climate crisis, but the benefits of low carbon development for their happiness and wellbeing. This is especially important for organizations and individuals who can influence the development and implementation of these solutions.

To enhance Yukoner's understanding of the challenges and opportunities of ambitious climate action, we recommend that YG:

Empower and inspire all Yukon people to act through education and awareness.

To advance this recommendation, YG could:

EA1. Increase visibility and public familiarity with GHG reduction technologies (i.e., install solar panels or other renewable energy infrastructure at Yukon schools);

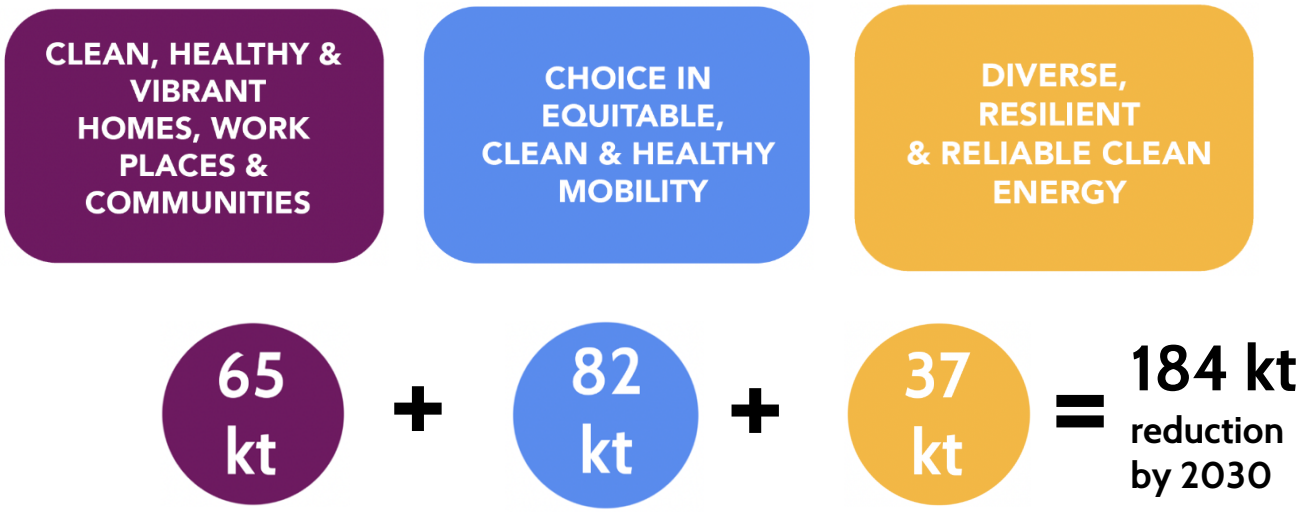
EA2. Support Yukon University in becoming a national leader in climate change education and research in the north, including climate change policy certification;

EA3. Provide YG Department of Education with the mandate, staff, and resources to implement comprehensive K-12 climate change curriculum across subjects. Ensure climate education includes northern literacy, cultural context, and on-the-land learning; and

EA4. Support the development and delivery of climate change education for the that improves understanding of climate change and the Yukon's response to it.

RECOMMENDATIONS TO REDUCE EMISSIONS

The three Emissions Reductions Areas are where the emissions reductions really happen. Combined, our recommendations and associated Suggested Actions in these areas comprise a total reduction opportunity of about 184 kilotonnes (kt) of greenhouse gas emissions by 2030, more than the 160 kt needed to meet the 45% target in 2030.



KEY TO THE SUGGESTED ACTIONS

In the introduction to each Emissions Reductions Area, we describe an overarching vision and description of what reconciliation with Yukon First Nation people might look like. To balance specificity with flexibility, we generated a list of Suggested Actions that could help achieve each overarching recommendation. These actions follow the introduction in table format.

Suggested Actions	CO-BENEFITS: Improves social equity	CO-BENEFITS: Increases system resilience & diversity	CO-BENEFITS: Increases self-sufficiency or security	CO-BENEFITS: Fosters community health and vitality	EMISSIONS REDUCTION OPPORTUNITY (kt)	ADDITIONAL COMMENTS/CONTEXT	RECONCILIATION PILLARS (by goal)
To reduce the carbon footprint of Yukon's building stock:							
H1. For buildings on the power grid, expand OCF Action H1 to include Crown Corporation owned buildings and a target of 75%.	--	↑	↑	↑	45	Complete fuel switching ahead of building retrofits when retrofit capacity is not available. Improves air quality/health; creates local employment; requires clean electricity target is met.	*Opportunity – Training and Employment*

Suggested Actions – these are potential (numbered) actions that YG could take to achieve the associated goals (in colour) and vision (preceding introductory page)

Co-Benefits – the impact of actions in relation to desired co-benefits Council desired (↑– positive ↓ – negative -- negligible)

Emissions Reduction Opportunity – Estimate of emission reduction potential for the action. Actual reductions will vary based on how strongly the action is implemented. The potential shown here is an opinion of what may be achieved with a reasonable, but concerted, level of effort. These emission reduction estimates should be assessed and reviewed in detail by qualified third parties.

Additional Comments/Context – Council comments on implementation and/or achievement of co-benefits

Reconciliation Pillars – The reconciliation pillars (see pp. 4-5) that are most relevant to the overarching goals and associated actions

#1. CLEAN, HEALTHY AND VIBRANT HOMES, WORKPLACES AND COMMUNITIES

65 kt

= 400 B-trains of heating fuel being taken off the road every year

We recommend that the Government of Yukon prioritize helping all Yukon people transform communities, homes, and work and gathering places to become cleaner, healthier and more livable.

This means:

- *Transitioning buildings to clean, locally sourced heat;*
- *Reducing the Yukon people's dependence on imported oil and propane;*
- *Increasing community resilience by focusing on clean development and enhancing efforts to increase the availability of local food, building materials, and capacity;*
- *Facilitating development of more people-oriented, livable communities; and*
- *Reclaiming and reforesting barren and abandoned lands in and around communities to capture carbon and restore ecosystems, while reducing wildfire risk.*

Implementing this recommendation will improve Yukon people's indoor and outdoor air quality as well as reduce health care and living costs. By prioritizing Yukon government resources to achieve this recommendation, the Yukon could decrease greenhouse gas emission reductions by an **additional 65 kilotonnes per year by 2030.**

WHAT RECONCILIATION LOOKS LIKE FOR CLEAN, HEALTHY HOMES AND COMMUNITIES

Opportunity	Capacity, training and employment for YFN citizens in energy retrofits, low carbon fuel supply, and other areas.
Self-Determination	Potential for YFN ownership of housing projects and responsibility for clean, healthy homes. This aligns with YFN values of homes at the centre of life and community, providing healthy options for people and caring for people as well as the land.
Equity	Actions can be carried out in an equitable way to ensure safe housing for everyone. Incentives should be structured to ensure lower income households are not left out. Partnerships with YFN governments can help advance this pillar.
Community & Environment	Cleaner air and reduced GHG emissions

Definition: The term "low carbon" is used throughout this section. Low carbon is a relative measure of carbon-based GHG emissions (e.g., carbon dioxide and methane) from energy sources or technologies associated primarily with the burning of carbon-based fuels for the purposes of electricity production, building heat, and transportation. For a full inventory of carbon emission sources in the Yukon, see Government of Yukon (2021).

Suggested Actions

	CO-BENEFITS				EMISSIONS REDUCTION OPPORTUNITY (kt)	ADDITIONAL COMMENTS/CONTEXT	RECONCILIATION PILLARS (by goal)
	Improves social equity	Increases system resilience & diversity	Increases self-sufficiency or security	Fosters community health and vitality			
To reduce the carbon footprint of the Yukon's building stock:							
H1. For buildings on the power grid, expand OCF Action H1 to include Crown Corporation owned buildings and increase reductions to 75% by 2030 for all government and Crown Corporation buildings.	--	↑	↑	↑	45	Complete fuel switching ahead of building retrofits when retrofit capacity is not available. Improves air quality/health; creates local employment; requires clean electricity production meets the demand for electric heat.	
H2. Require all new government funded and owned building projects to use low carbon* heating as their primary heating source.	--	↑	↑	↑		Air quality, health improvements and local employment are co-benefits. Requires that low carbon electricity target is met.	*Opportunity – Training and Employment* *Community and Environment – Socio impacts*
H3. Require all government funding, grants, etc. for residential and commercial building projects to use low carbon* heating as their primary heating source.	↑	↑	↑	↑	1.6	H2 comments apply. Grant would be needed to increase social equity by offsetting costs if program is tailored to income levels. Funding support of programs tailored to lower income levels will be needed.	
H4. Make fuel switching a priority for building incentives regardless of other retrofit upgrades.	↓	↑	↑	↑		H2 comments apply. This may be lower cost and more accessible to people given limited contractor capacity/availability for retrofits.	
H5. Impose a "pollution fee" surcharge on all fossil fuel heating appliances sold in the Yukon.	↓	↑	↑	↑		This could be similar to the *Designated Materials Regulation*. Consider targeted rebates for clean heating to offset adverse effect of surcharge.	
H6. Reduce the life cycle carbon intensity of heating oil sold in the Yukon by 30% by 2030 and align with BC's Low Carbon Fuel Standard (LCFS) and implement as per BC's Roadmap to 2030.	↓	↓	↓	--	2.3	The Yukon will need a LCFS to encourage fuel suppliers to import lower carbon fuels. This recommendation is vulnerable to supply and relies on unreliable technologies (e.g., carbon capture) and biofuels which may impact food production and biodiversity.	
H7. Invest in community infrastructure to implement and enhance district heating through heat recovery from power generation.	--	↑	↑	↑	1.2	H2 comments apply. Creates potential energy cost savings, especially for local governments. Look for opportunities to build local ownership (e.g., First Nation owned). Would be most effective in off-grid communities.	

	CO-BENEFITS				EMISSIONS REDUCTION OPPORTUNITY (kt)	ADDITIONAL COMMENTS/CONTEXT	RECONCILIATION PILLARS (by goal)
	Improves social equity	Increases system resilience & diversity	Increases self-sufficiency or security	Fosters community health and vitality			
To reduce the carbon footprint of the Yukon's building stock (cont'd):							
H8. Require all buildings constructed after 2025 and 2027 to meet Tier 3 and Tier 4, respectively of the National Building Code of Canada 2020 (NBC 2020)	↑	↑	↑	↑	2.5	This would be 20% and 60% more efficient than NBC 2020's minimum requirement. Reduces long-term energy cost risk, creates healthier buildings, and reduces load on electrical grid.	*Opportunity – training and employment; Community & Environment – socio impacts and reduced GHGs*
H9. Develop and implement a labour force strategy for building retrofits and fuel switching (e.g., local training, re-assign/train YG employees, Outside workers, etc.)	↑	↑	↑	↑	0.6	Creates more green economy opportunities. "Wrap-around" support (e.g., childcare, transportation, subsidies, etc.) will be required for equal opportunity.	
To encourage denser development:							
H10. Incentivize more efficient land use by updating the Yukon's property tax regime to increase assessed value of land relative to assessed value of improvements.	↑	↑	--	↑	4.4	Social equity is supported by more diverse and inclusive housing, and density reduces dependence on vehicle ownership/operation.	*Community and Environment - reduced GHG emissions; Self-determination - jurisdiction*
H11. Prioritize territorial resources towards land development within municipal boundaries and around community centres instead of rural residential.	↑	↑	↑	↑			
To increase local food production and reduce food waste:							
H12. Develop and implement a program to increase greenhouse-based local food production powered by low carbon energy (i.e., waste heat, geothermal, etc.)	--	↑	↑	↑	0.3	Social equity is supported by access to healthy food; requires a strategy to ensure food prices do not increase for lower income households.	*Self-determination - ownership; Opportunity – training & employment, ownership; Equity - partnership, food security*
H13. Review successes and barriers to implementation of YG's 2016-2021 local food strategy and update as needed with an emphasis on GHG emission reduction.	--	↑	↑	↑		Engage local food grower, producers, vendors and other relevant parties in revision and revisions to strategy.	

	CO-BENEFITS				EMISSIONS REDUCTION OPPORTUNITY (kt)	ADDITIONAL COMMENTS/CONTEXT	RECONCILIATION PILLARS (by goal)
	Improves social equity	Increases system resilience & diversity	Increases self-sufficiency or security	Fosters community health and vitality			
To increase local food production and reduce food waste (cont'd):							
H14. Partner with municipalities and First Nations to identify and address barriers to reducing organic waste and diverting it from landfills to composting facilities, including education, incentives and required infrastructure.	↑	↑	↑	↑	**3.7**	Benefits include cost savings from reducing food waste, reduced GHG emissions from food transportation and landfills, and compost to support local food production.	*See page 13*
To encourage use for local building materials:							
H15. Work with local communities and the wood products industry to invest in, and assess the carbon reduction potential of, expanding production of Yukon-sourced wood building materials, with biomass heating fuel produced from wood waste*.	--	↑	↑	↑	--	Net emissions reductions are uncertain and need to be determined. Ensure timber harvesting is ecologically sustainable and uses low carbon practices. Creates local employment. Requires coordination with land use planning, fire management and other resource management plans. Links to increasing Yukon's housing stock.	*Opportunity – land use planning, partnership, training and employment*

*Emissions reduction from this action are accounted for in biomass use for heating implied in Actions H1-H5.

	CO-BENEFITS				EMISSIONS REDUCTION OPPORTUNITY (kt)	ADDITIONAL COMMENTS/CONTEXT	RECONCILIATION PILLARS (by goal)
	Improves social equity	Increases system resilience & diversity	Increases self-sufficiency or security	Fosters community health and vitality			
To optimize carbon sequestration:							
H17. Identify and pursue opportunities to plant deciduous (broadleaf) trees and native berries where net carbon benefit exists. Develop incentive programs (e.g., free seedlings) as required.	--	↑	↑	↑	8.2	May include wildfire breaks, dormant agricultural areas, gravel pits, highway right of ways, etc. Creates local employment opportunities, plus access to local food through berries and helps reduce wildfire risk. Reforesting barren areas improves resident health. This action, if implemented soon and with measurable effort, could result in significant carbon removals past 2030 and be an important action taken now to achieve 2050 goals. This is because of the continual and growing removals over time created by afforestation.	*Opportunity - partnership, training, employment; Community & Environment - impact to land, carbon sequestration*
H18. Collaborate with wildfire fuel management to transition landscapes to deciduous forest, where appropriate.	--	↑	↑	↑		Programs need to be re-designed to minimize carbon release from soils (from clear cutting) plus recover all biomass for re-use. Reduced wildfire risk and associated health impacts.	

#2. CHOICE IN EQUITABLE, CLEAN AND HEALTHY MOBILITY FOR ALL YUKON PEOPLE

82 kt

= *Every Yukoner driving 9300 fewer kilometres each year*

We recommend that the Government of Yukon provide Yukon people with cleaner and healthier mobility choices to meet their daily needs.

This means:

- *Creating comfortable, accessible active transportation routes in all communities for Yukon people to meet their local travel needs year-round, including high quality end-of-trip infrastructure such as bike parking and convenient connections to key destinations;*
- *Recognizing that shifting to electrified transportation will not be enough to meet 2030 emissions reductions goals, creating more opportunity to use clean transportation options for personal, school and work travel;*
- *Joining other leading provinces in Canada in the requirement for cleaner transportation fuel, including piloting hydrogen fuel in the Yukon; and*
- *Reducing Yukon people's dependence on car trips to meet daily needs such as travel to work, school and essential services.*

These approaches will increase equity and access to mobility for all Yukon people, while reducing vulnerability to transportation cost fluctuations. This will result in increased local economic prosperity by keeping energy spending in the Yukon and reducing health care costs. By prioritizing Yukon Government resources to this recommendation, Yukon could decrease greenhouse gas emission reductions by an **additional 82 kilotonnes per year by 2030.**

WHAT RECONCILIATION LOOKS LIKE FOR CLEAN, EQUITABLE ENERGY

Many Yukon First Nation people live in rural communities where getting around without a car can be challenging. In addition, there are very limited choices for travel between Yukon communities.

Opportunity	Partnerships between municipalities, YG and YFNs for transportation planning and implementation. Electrification of school buses could be an opportunity for a First Nation government or business.
Equity	Access to transportation is also access to healthy food, services and employment.
Self-Determination	Engagement of First Nation governments and people in transportation demand management planning.

Suggested Actions

	CO-BENEFITS				EMISSIONS REDUCTION OPPORTUNITY (kt)	ADDITIONAL COMMENTS/CONTEXT	RECONCILIATION PILLARS (by goal)
	Improves social equity	Increases system resilience & diversity	Increases self-sufficiency or security	Fosters community health and vitality			
To reduce the carbon footprint of internal combustion engine vehicle use:							
M1. Reduce fossil fuel use from YG fleet vehicles by 50% through trip reduction, ZEV purchases, etc.	--	↑	--	↑	2.7	Trip reduction can be achieved through car-pooling, use of remote and/or hybrid meetings, flexible work arrangements, etc.	
M2. Reduce the lifecycle carbon intensity of transportation fuels by 30% for both gasoline and diesel in alignment with BC's Low Carbon Fuel Standard (LCFS) and implement as per BC's Roadmap to 2030.	--	↑	--	↑	51.5	The territory will need a LCFS to encourage Yukon fuel suppliers to import gas and diesel with a reduced carbon intensity. This recommendation is vulnerable to supply, and relies on unreliable technologies (e.g., carbon capture) and biofuels which have the potential to impact food production and exacerbate the biodiversity crisis.	*Community & Environment – reduced GHG emissions*
M3. Implement a continuous anti-idling and efficient driving campaign across the Yukon, including a focus on student education.	--	↑	--	↑	2.2	Model program after successful recycling campaigns that have changed behaviour. YG could create idle free zones and policy where it has jurisdiction (e.g., unincorporated areas, YG properties, etc.) Efficient driving includes vehicle maintenance and driving habits.	
To increase the adoption of zero emissions vehicles (ZEVs):							
M4. Establish a Zero Emissions Vehicle Act for the Yukon, modelling after British Columbia, that requires vehicle sellers to achieve sales and lease targets for ZEVs.	--	↑	--	--	6.5	Provinces with ZEV mandates (i.e., BC & Quebec) have greater access to ZEVs. This solution is vulnerable to supply chain issues (minerals, semiconductors, manufacturing). Requires clean electricity target is met and infrastructure to support charging ZEVs	*Opportunity - FN government or business (electric school buses); Community & Environment – reduced GHG emissions*
M5. For OCF Action T1, increase the ZEV sales target for light duty vehicles from 30% to 45% by 2030, or align with federal mandate, whichever is higher.	--	↑	--	--			

	CO-BENEFITS				EMISSIONS REDUCTION OPPORTUNITY (kt)	ADDITIONAL COMMENTS/CONTEXT	RECONCILIATION PILLARS (by goal)
	Improves social equity	Increases system resilience & diversity	Increases self-sufficiency or security	Fosters community health and vitality			
To increase the adoption of zero emissions vehicles (cont'd):							
M6. Develop and implement a comprehensive 50% benefit policy for ZEVs that can include: - 50% discounted registration/parking fees - 50% of all parking space at YG facilities are designated for ZEVs etc. by 2030	--	↑	--	--	0.5	This action is modelled off the "50% Rule" used in Norway's proven successful EV policy.	*Opportunity - FN government or business (electric school buses); Community & Environment – reduced GHG emissions*
M7. Work with school bus contractors to facilitate the replacement of retiring internal combustion engine buses with electric buses.	--	↑	--	--	1.3	This action could be expanded to other governments (First Nation, municipal, etc.) Hydrogen could be an option if there is a reliable supply of green hydrogen.	
To support the adoption of emerging fuel technologies:							
M8. Fund a green hydrogen fuel demonstration project in the transportation sector with a construction start of 2025 and operating timeframe of 2028.	--	↑	↑	↑	--	This would be best geared towards a local transportation company or company with significant warehousing activity. This aligns with federal, BC and AB investment in hydrogen fuel. Requires clean electricity target to be met to support production of green hydrogen. Intended for use with fuel cells (not burning). Supports local fuel production and increased potential for climate job opportunities. Prepares for demand from long-haul trucking.	*Opportunity & Equity - partnership*

	CO-BENEFITS				EMISSIONS REDUCTION OPPORTUNITY (kt)	ADDITIONAL COMMENTS/CONTEXT	RECONCILIATION PILLARS (by goal)
	Improves social equity	Increase system resilience & diversity	Increases self-sufficiency or security	Fosters community health and vitality			
To reduce single occupancy vehicle trips:							
M9. Develop and implement a student travel reduction program to reduce private vehicle travel of Yukon students to and from school by 45% by 2030.	--	↑	--	↑	1	The strategy could include: education, transit improvements, promotion of active transportation, and rebates on bicycles. Data on student travel patterns in Yukon is needed. Agreements could help to define the roles and responsibilities in areas of overlap between CoW/YG. Human resource allocation is critical.	
M10. Advocate for the reduction or elimination of minimum parking requirements in municipalities.	↑	↑	↑	↑	12	Contributes to affordable housing by reducing development costs and encourages compact communities where it is easier, safer and more affordable to live and work without a car.	*Opportunity - partnership; Equity - fairness*
M11. Provide stable and increasing operational funding for municipal transit to improve service levels and grow ridership.	↑	↑	↑	↑			
M12. Beginning in 2023, structure budgets for the development and maintenance of active transportation and/or transit-specific infrastructure to equal to or exceed 15% of the budget for automobile infrastructure, with the ratio increasing by 5% a year (to 45% by 2030).	↑	↑	↑	↑		Develop agreements to define the roles and responsibilities for areas of overlap between CoW/YG, such as the Alaska Highway within City limits, data collection and monitoring, road safety data, etc.	
M13. Advocate for and provide support to municipalities to develop, approve, implement and report regularly on a Transportation Demand Management Plan that supports the reduction of greenhouse gas emissions.	↑	↑	↑	↑		Clean BC is proposing 25% reduction for all light-duty vehicle miles travelled. TDM implementation reporting could be a requirement for larger municipalities to receive Gas Tax funding.	

#3. DIVERSE, RESILIENT AND RELIABLE CLEAN ENERGY FOR YUKON PEOPLE AND COMMUNITIES

37 kt = *42 days of full power production at the Whitehorse Rapids dam*

We recommend that the Government of Yukon prepare for a future electrified society by working to diversify the Yukon's low carbon energy sources and increase the resiliency and efficiency of the Yukon's electrical system.

This means:

- *Reducing the use of fossil fuels for energy generation in winter and facilitating a significant increase of low carbon energy supply in remote communities;*
- *Investing in electrical infrastructure to increase the efficiency, resiliency, and capacity of our electrical grid;*
- *Replacing the current regulatory system with a modern, future ready legislative and policy framework; and*
- *Increasing Yukon people's opportunity to participate in supplying and using low carbon energy.*

Society is headed down the electrification pathway and meeting the Yukon's needs will be a challenge. Uncertainty on this front undermines the necessary shifts needed in both the transportation and heating sectors. Put simply, if people don't have faith in electricity being available and affordable, why would they change their home's heating system or invest in an electric vehicle? YG needs to engage with Yukoners regarding energy options, including those that are controversial (such as nuclear power) to prepare to adopt emerging technologies as they become available.

Our suggested actions would reduce the risk to the Yukon's grid posed by single-source electricity generation and reduce vulnerability to energy cost fluctuations. It would also increase the Yukon's energy self-sufficiency and keep energy spending within the Yukon's economy. By prioritizing Yukon government resources to this recommendation, the territory could decrease greenhouse gas emission reductions by an **additional 37 kilotonnes per year by 2030.**

WHAT RECONCILIATION LOOKS LIKE FOR CLEAN ENERGY

Opportunity	Investment, ownership and partnership for renewable energy projects and sale of ZEV charging. Training and employment for operation and maintenance of renewable energy projects.
Equity	Fully or partly Indigenous owned entities can help make the transition off diesel generation in grid isolated communities and help implement smart grid technologies. These entities can re-invest in YFN people and communities with revenues from these opportunities.
Self-Determination	Many Yukon First Nations have declared climate crises/emergencies. These recommendations give Yukon First Nations the tools to address the emergency with their own approach
Community & Environment	Use of local areas and resources and consideration of impacts to the land in decisions about which renewable technologies to pursue.

Suggested Actions

	CO-BENEFITS				EMISSIONS REDUCTION OPPORTUNITY (kt)	ADDITIONAL COMMENTS/CONTEXT	RECONCILIATION PILLARS (by goal)
	Improves social equity	Increases system resilience & diversity	Increases self-sufficiency or security	Fosters community health and vitality			
To reduce fossil fuel-based power generation:							
E1. Commit to reducing diesel generation in grid isolated communities to less than 50% of total energy production by 2030.	↑	↑	↑	↑	3.1	Improves resiliency through diversity of supply; aligns with federal commitments to phase out diesel generation by 2030. 100% renewable generation could be achievable in some locations. Prioritize energy projects that are Indigenous led and owned.	*Self-determination - jurisdiction; Opportunity & Equity - training, employment, partnership, ownership*
E2. Revise and/or expand the Standing Offer Program to focus specifically on base load renewable energy projects that yield much higher GHG reductions, improve firm capacity and support more dispatchable resources.	--	↑	↑	↑	18		
To increase energy efficiency and capacity to meet growing demand:							
E3. Remove the regulatory barriers to smart meters for all customers in the Yukon by 2024 and cover the capital and deployment cost of the smart meters by 2026.	↑	↑	↑	↑	7.2	The smart meters must be approved by utilities to meet their needs and be future proof. Two-way communication and control for demand-side management capabilities should be facilitated.	*Opportunity - training, employment; Equity - partnership, ownership*
E4. Update electrical and building codes to require all new detached, semi-detached and row-housing to be built with 200A services. Update utility regulations so that customers are not responsible for costs when upgrading to 200A services.	↑	↑	↑	↑		"Customers" in this context are both existing and new.	
E5. Yukon Energy Corporation should include a Smart Grid roadmap in their next resource plan update to facilitate the integration of distributed energy resources and improve system resiliency and efficiency.	↑	↑	↑	↑		Identify enabling technologies for future grid enhancements to support more GHG emission reducing initiatives	

	CO-BENEFITS				EMISSIONS REDUCTION OPPORTUNITY (kt)	ADDITIONAL COMMENTS/CONTEXT	RECONCILIATION PILLARS (by goal)
	Improves social equity	Increase system resilience & diversity	Increases self-sufficiency or security	Fosters community health and vitality			
To equip Yukon with a future-ready legislative and policy foundation:							
E6. Modernize the Yukon Public Utilities Act to align with climate commitments by:						May require a comprehensive review of the Act and comparison to other jurisdictions.	
E6a. Changing YUB's mandate to include GHG reductions by including the social cost of carbon over the lifetime of projects in the business case evaluation of project costs.	↑	↑	↑	↑	2	Approach must be flexible enough to consider both GHGs and costs and adapt as climate action needs change. However, it must be carefully and rigorously structured to support balanced decision-making. A social cost of carbon could be included in the cost evaluation.	*Opportunity - partnership*
E6b. Revise retail rate structure to reflect the higher cost and greater GHG emissions of generating electricity at or near system peak demand periods that require the use of fossil fuel generation.	↑	↑	↑	↑	4		
E6c. Reduce the cost of regulation, allow more customer involvement in the regulatory process, and increase the accountability of regulated utilities to avoid consistent overearning and underearning.	↑	↑	↑	↑	--	YESAB's accessibility (i.e., lower cost to participate, inclusive for those affected by decisions, etc.) is a good model.	
E6d. Introduce regulatory changes needed to allow the sale of heat.	↑	↑	↑	↑	--	Incentivize the utility to invest in infrastructure to utilize waste heat of their generators and distribute to secondary users. This must be structured to ensure that this does not incentivize further fossil fuel generation assets/utilization. May incentivize biomass combined heat and power options.	

	CO-BENEFITS				EMISSIONS REDUCTION OPPORTUNITY (kt)	ADDITIONAL COMMENTS/CONTEXT	RECONCILIATION PILLARS (by goal)
	Improves social equity	Increase system resilience & diversity	Increases self-sufficiency or security	Fosters community health and vitality			
To empower and encourage broader participation in and benefits from energy production:							
E7. Identify and encourage investment and/or ownership opportunities for Yukon First Nations in Yukon Energy Corporation, ATCO Electric Yukon and Independent Power Projects.	↑	↑	↑	↑	2		*Opportunity - ownership, partnership*
E8. Revise the project eligibility criteria for YG Economic Development funding to include renewable energy demonstration or pilot projects.	↑	↑	↑	↑	--	YG to set aside funding for innovation and demonstration projects that have potential for significant climate target reductions. Could be high risk, but has potential for high rewards	
E9. Establish a rate and policy to permit power reselling and allow third party EV charging stations and vehicle-to-grid (V2G) options for non-utility entities*.	↑	↑	↑	↑	--	Structure to avoid monopolies (e.g., a condo developer who becomes their own power reseller to tenants). Should also allow power wheeling (e.g., excess wind from an independent power producer providing power through AEY's distribution network).	

*Emissions reduction from this action are accounted for in actions to increase energy efficiency and capacity to meet demand (E3-E5).

EVIDENCE AND EXAMPLES

Section	Suggested Action	Notes
Overview (pg. 4)		Amiro et al. (2010). Ecosystem carbon dioxide fluxes after disturbance in forests of North America. Journal of Geophysical Research 115(G4): https://doi.org/10.1029/2010JG001390 Harris et al. (2021). The essential carbon service provided by northern peatlands. Frontiers in Ecology and the Environment 20(4): 222-230. https://doi.org/10.1002/fee.2437
Leader-ship, Capacity Building, etc.	L1	Piper, Dannielle. (July 24, 2022). Why reporting on GHGs more often would help Canada advance its climate agenda. CBC Radio What on Earth. https://www.cbc.ca/radio/whatonearth/canada-greenhouse-gas-climate-reporting-1.6528330
	EA3	Cordero, E.C., D. Centeno, and A.M. Todd. (2020). The role of climate change education on individual lifetime carbon emissions. PLoS ONE 15(2): e0206266. https://doi.org/10.1371/journal.pone.0206266 Bieler et al. (2017). A National Overview of Climate Change Education Policy: Policy Coherence between Subnational Climate and Education Policies in Canada (K-12). Journal of Education for Sustainable Development 11(2):63-85 DOI:10.1177/0973408218754625 Field, E., P. Schwartzberg, and P. Berger. (2019). Canada, Climate Change and Education: Opportunities for Public and Formal Education (Formal Report for Learning for a Sustainable Future). North York, Canada: York University Printing Services. https://lsf-lst.ca/media/National_Report/National_Climate_Change_Education_FINAL.pdf
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	H8	Liberal Party. (2022). Our Platform. http://liberal.ca/our-platform/
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	H10/11	City of Whitehorse. (2018). City of Whitehorse, 2010 Official Community Plan (OCP). https://www.whitehorse.ca/home/showpublisheddocument/10347/636730482186100000 EPA, United State Environmental Protection Agency. (2022, July 19). Estimating Emission Reductions from Travel Efficiency Strategies. https://www.epa.gov/state-and-local-transportation/estimating-emission-reductions-travel-efficiency-strategies Vincent, Joshua. (March 6, 2019). Non-Glamorous Gains: The Pennsylvania Land Tax Experiment. Strong Towns. https://www.strongtowns.org/journal/2019/3/6/non-glamorous-gains-the-pennsylvania-land-tax-experiment
	H12/13	Anderson, C.E., Rasmussen, F.N., Habert, G., & Birgisdottir, H. (2021). Embodied GHG Emissions of Wooden Buildings – Challenges of Biogenic Carbon Accounting in Current LCA Methods. Frontiers. 31 August 2021. https://doi.org/10.3389/fbuil.2021.729096
	H14	City of Whitehorse. (2021, June 28). City of Whitehorse, Corporate Greenhouse Gas Emissions Inventory, 2020 Update. https://www.whitehorse.ca/departments/planning-sustainability-services/emissions-inventory Government of Canada. (2019, June 28). Taking stock: Reducing food loss and waste in Canada. https://www.canada.ca/en/environment-climate-change/services/managing-reducing-waste/food-loss-waste/taking-stock.html
	H15/16	Canadian Wood Council. (2022). Carbon Calculator. https://cwc.ca/en/design-tools/carbon-calculator/

Section	Suggested Action	Notes
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	M3	Government of Canada. (2017, February 23). Idling – Frequently Asked Questions. https://www.nrcan.gc.ca/energy/efficiency/communities-infrastructure/transportation/idling/4463 Government of Canada. (2016, September 20). Emission impacts resulting from vehicle idling. https://www.nrcan.gc.ca/energy/efficiency/communities-infrastructure/transportation/cars-light-trucks/idling/4415 Government of Canada. (2016, January 19). A Model Idling Control By-law. https://www.nrcan.gc.ca/energy/efficiency/communities-infrastructure/transportation/municipal-communities/reports/4405 City of Edmonton. (2022). Be Idle Free. https://www.edmonton.ca/city_government/environmental_stewardship/be-idle-free City of Yellowknife. (2008, April 28). City of Yellowknife By-law No. 4478. https://www.yellowknife.ca/Bylaws/Bylaw/Download/abcf3065-56d9-4131-a0b8-0b3ca30b6086 EPA, United State Environmental Protection Agency. (2022, July 19). Estimating Emission Reductions from Travel Efficiency Strategies. https://www.epa.gov/state-and-local-transportation/estimating-emission-reductions-travel-efficiency-strategies
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Section	Suggested Action	Notes
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	M9	CAA. (2022). Supporting our kids on the journey to school. A CAA School Travel Study. https://www.caa.ca/app/uploads/2022/06/Supporting-our-kids-on-the-journey-to-school.pdf
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	E2	CIGRE Working Group - JWG C6/D2.32 - Utilization of data from smart meter system
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