

Yukon Government Climate Change Strategy

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Preface

Like many issues in the north, climate change involves a mix of technical challenges, conflicting perspectives and perceived responsibilities. While some aspects of the climate change issue are common to all jurisdictions, other aspects are unique to Canada's north and to the Yukon.

As in other jurisdictions, the measurement of climate change impacts requires the application of proven scientific methods to an uncontrolled experiment in a global-scale laboratory. Climate change scientists are tasked with predicting the impacts of global warming with evidence from an all-too-short reference period in a context where mere fractions of a degree of temperature can have significant impacts over time. The need for coordinated expertise between multiple fields of scientific study also adds to the technical challenge. In addition, the requirement to distinguish between natural atmospheric warming and that caused by humans (the anthropogenic component) contributes to the complexity of the task at hand.

A rational response to climate change by Yukoners requires, however, an understanding of the impacts of climate change. As with the science of global warming, the estimation of climate change impacts at the local level is difficult. Climatic conditions which influence biophysical impacts vary according to myriad factors such as topography, elevation, latitude and orientation to the sun and make the measurement and generalization of impacts a difficult endeavor.

Similarly, the links between climate change and the Yukon socio-economy are not well understood. Most Yukoners would likely agree that climate change will have an impact in the Yukon on resource extraction, transportation, built structures, new construction, recreation, tourism, settlements, country food, human health and fisheries. What is not clear, however, is whether the impacts are viewed as positive or negative let alone to what the degree the impacts will be felt at the community level.

Human responses to climate change are classified as one of two general types: mitigation and adaptation. Mitigation responses attempt to reduce the volume of greenhouse gases discharged into the atmosphere through measures such as energy efficiency and switching to cleaner fuels. Adaptation measures are intended to reduce vulnerability to harm or damage from the bio-physical and socio-economic impacts of climate change. Adaptation measures also include efforts to harness new opportunities resulting from climate change impacts. Mitigation and adaptation measures are by no means mutually exclusive; a combination of both types of responses is being applied in all jurisdictions in Canada.

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All jurisdictions also share in the public policy uncertainty surrounding climate change that results from the assignment of responsibility for an issue between more than one level of government. Federal, provincial/territorial and municipal governments in Canada all share jurisdiction and authority on the climate change file. Public policy uncertainty is compounded by the assignment of responsibility among different parts of the same governments. In the Yukon, responsibility for climate change matters has been further distributed with the realization of self-government by a majority of the territory's fourteen First Nations.

In terms of public policy, the climate change response of a given jurisdiction is, and will continue to be, guided by a balancing of perceived local climate change impacts against perceptions of the effectiveness of mitigation and adaptation responses. Herein lies the Yukon's climate change conundrum.

From one perspective, recognition is growing that Yukoners will experience climate change impacts on a "first and worst" basis. From another perspective, our energy-intensive northern lifestyle makes us high per-capita emitters of greenhouse gases. From a third perspective, the sum total of Yukon greenhouse gas emissions is so small that even if the Yukon achieved zero greenhouse gas emissions the impact on global warming would be infinitesimal.

The conundrum is further complicated by the state of development of the territory's natural gas industry. The Yukon is poised to contribute to the increased supply of a cleaner type of fuel into North American markets via increased extraction of local natural gas resources and an Alaska Highway pipeline. At the same time, the extraction and transport of natural gas will significantly increase the volume of Yukon greenhouse gas emissions.

How, then, to determine the appropriate mix of climate change responses? Clearly, the Yukon Government cannot solve the many challenges presented by climate change on its own. It can, however, demonstrate leadership by defining its own climate change role to provide clarity for other governments, organizations, agencies and individuals also tasked with responding to climate change.

Accordingly, the key purpose of this document is to frame the Yukon Government's climate change role. It is hoped that this framework strategy will also be used as a starting point for discussions with governments, organizations, agencies and individuals who share responsibility with the Yukon Government for developing a comprehensive made-in-Yukon response to climate change.

The Science of Climate Change

Climate change, a result of global warming, is caused both by natural factors and human activities. Volcanic activity and associated dust concentrations as well as the ebb and flow of solar intensity are the major natural causes of global warming.

Human activity also contributes to climate change via increased emissions of greenhouse gases and by reducing carbon sinks. Human-made (or, anthropogenic) emissions of greenhouse gases such as carbon dioxide are the result of the burning of oil, coal and natural gas. Carbon dioxide emissions also result from human-induced changes in land use which reduces the earth's natural capacity to store carbon dioxide such as when forests are transformed to farmland.

The International Panel on Climate Change tabled its *Third Assessment Report* in January 2001. Prepared through the efforts of more than 500 scientists with findings confirmed by more than 300 expert reviewers, the report outlines the most current knowledge on the global climate system. Some key findings in the report as stated in the *Summary for Policymakers* which accompanies the full report include:

- *An increasing body of observations gives a collective picture of a warming world and other changes in the climate system;*
- *The global average surface temperature has increased over the 20th century by about 0.6°C;*
- *...ground-based observations show that there is very likely [90-99% chance] to have been a reduction of about two weeks in the annual duration of lake and river ice cover in the mid-and high latitudes of the Northern Hemisphere, over the 20th century;*
- *A few areas of the globe have not warmed in recent decades, mainly over some parts of the Southern Hemisphere oceans and parts of Antarctica; and,*
- *There is new and stronger evidence that most of the warming observed over the last 50 years is attributable to human activities.ⁱ*

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At the Yukon scale, information compiled by the Northern Climate ExChange indicates that “the rate and magnitude of temperature change is predicted to be greatest in high latitude regions of the Northern Hemisphere, and may rise by as much as 5°C to 7°C”.ⁱⁱ Projections of Yukon-specific climate changes include:

- Higher year-round temperatures:
 - winters warming more than summers, winter warming being greater farther north; and
 - summers warming more in the south and central Yukon than in the north, due to the moderating effect of the Beaufort Sea.
- More snow in the winter, with the change being greater farther north (there will be little change in average summer precipitation levels).
- More and larger storms (both winter storms and heavy summer rainfall storms, with more thunder and lightning).ⁱⁱⁱ

Yukon Climate Change Impacts

That our climate is changing as a result of global warming caused by human-induced greenhouse gas emissions is no longer a matter of debate. Agreement on the impacts of climate change, however, is much less advanced. Climate change impacts are as varied as the earth’s topography making generalizations about whether the impacts are positive or negative (let alone to what the degree the impacts will be felt at the community level) problematic.

To assist in their assessment, climate change impacts are classified as being one of two general types. The first, biophysical impacts, include physical changes to northern landscapes and ecosystems. The second type of impacts, socio-economic, derive from bio-physical impacts and are expected to change how all Yukoners live and work. Information compiled by the Northern Climate ExChange and presented in a series of their *Bulletin*’s highlights the potential biophysical and socio-economic impacts of climate change specific to the Yukon^{iv}:

Biophysical Impacts

Glaciers :: in areas of high snowfall (generally at higher elevations), increased snowfall will more than compensate for warmer summer temperatures and glaciers that are advancing will continue to do so. Some glaciers at lower elevations may start to retreat, or retreat at a greater rate. Increased land instability is expected to result, with increased debris flows and changes in stream flow.

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Sea level :: the sea along Yukon's coast has been observed to be rising at an abnormally high rate and could rise more depending on the effects of a warming climate on major ice sheets in Greenland and Antarctica.

Coastal zones :: the Yukon coast will experience increased erosion and flooding, which may result in loss of wetlands and critical habitat for many species. This will occur as a result of more frequent and severe summer storms, sea level rise combined with melting ice-rich permafrost, and changes in sea ice.

Permafrost :: present beneath about 10% of the land in southern Yukon, a warming climate is expected to result in increased seasonal thaw and the thinning or disappearance of permafrost in some areas.

Land stability :: occurrences of landslides, including thaw-flow slides, are expected to increase, the impacts of which could be amplified by the expected increase in forest fire activity.

Water resources :: northern hydrology is particularly susceptible to warming due to increased melting of snow and ice which can result from only small increases in temperature. Rainfall is expected to be a more significant contributor to runoff volumes. Increased ponding of water is possible in some areas while in others peatlands may dry out. Infiltration may be affected in some areas where permafrost thaws.

Species migrations :: habitat shifts are predicted to occur along longitudinal axis (north/south) and in elevation. For example, treelines moving up mountainsides and northward. This means a loss of some types of habitat and gains in others, e.g. more forest and less tundra. A decline in wetlands, especially bogs, is expected. Species most at risk are those that live at the edge of their range, have very stringent habitat requirements, do not easily move into new areas, or adapt less rapidly to changing conditions.

Land ecosystems :: white spruce and lodgepole pine are expected to dominate in Yukon forests at the expense of black spruce. In alpine and tundra areas, seasonal plants may come to be dominated by larger shrubs. Plant species previously found only to the south are expected to make their way into the Yukon.

Wildlife :: long term changes in snow, and changes in the timing of spring, are predicted to alter the distribution and abundance of ungulates (e.g. moose, caribou, deer). More snow restricts movements of ungulates in winter and reproductive success is often linked to snow patterns and availability of food during the calving season. Insect-borne disease, parasites and more insect harassment may cause caribou and other animal populations to decline.

Birds :: a warmer climate may decrease chick mortality through longer nesting seasons and improved food availability. Migrating birds may experience a decrease in foraging ability as a result of delayed spring thaws.

Freshwater ecosystems :: a warmer climate may bring increased productivity to northern lakes and rivers for some species of fish. The same warming, however, may also cause deterioration in fish habitats through changes in water flow and water quality and the introduction of new parasites. Landslides may result in

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increased sediment loads and melting ice can release organic material into streams which reduces the oxygen supply for fish.

Marine ecosystems :: earlier ice break-ups could disadvantage animals that depend on sea ice such as walrus and seals. Sea ice platforms used by walrus and some seals for breeding, nursing pups, resting and moulting may also be lost.

Socio-economic Impacts

Oil and gas :: access to oil and gas exploration sites which rely on winter roads could be reduced if frost-free periods increase in length.

Mining :: changing precipitation levels could necessitate redesign and upgrades to mine-site tailings dams and water diversion structures.

Tourism and culture :: longer and warmer summers could enable an increase in tourism visitation. Erratic winter weather conditions could negatively impact Yukon film production industry's "first and last" snow marketing potential.

Infrastructure :: melting of permafrost could negatively impact the structural integrity of water and sewer systems, buildings, pipelines, culverts and storage tanks. Water courses may change and cause need for relocated and/or improved infrastructure.

Hydroelectric production :: changes in glacial melt patterns could alter stream flows and impact the generation of electricity from hydro sources.

Transportation :: transportation infrastructure (roads, airstrips, bridges) which rely on the properties of frozen ground may make the transportation of goods and services into Yukon communities and mining operations more difficult.

Forestry :: warmer temperatures may reduce the number of years Yukon forests need to grow to maturity and improve industry potential. At the same time, increased forest fire frequency and severity is anticipated as is an increase in damage-causing forest insect pests.

Agriculture :: subject to soil conditions and future precipitation patterns, warmer Yukon summers may lengthen the growing season, improve yields and allow a wider variety of crops to be grown and enhance greenhouse production.

Hunting and fishing :: changes in the location and populations of species will affect the nature and availability of hunting and fishing activities.

Traditional lifestyles :: impacts of climate change on the distribution and abundance of key fish and wildlife resources will affect the economy and culture of Aboriginal communities.

Health :: the floods, droughts, and strong wind events predicted to result from climate change bring potential to threaten people's lives and livelihoods. The spread of vector-borne diseases such as the West Nile virus assisted by warming temperatures also pose a threat to human health.

Yukon Climate Change Responses

Human responses to climate change are classified as one of two general types, mitigation and adaptation.

Mitigation responses attempt to reduce the volume of greenhouse gases discharged into the atmosphere to stabilise concentrations of greenhouse gases in the atmosphere. Mitigation measures specific to the Canadian north include:^v

- greenhouse gas emission reductions
- stabilised atmospheric concentrations of greenhouse gases
- improved energy efficiency
- shifting from high carbon to low carbon fuels
- expanded use of renewable energy sources (solar, biomass, wind)
- research and development in new technologies
- carbon sequestration in vegetation and soils
- geoengineering

The Kyoto Protocol

The Kyoto Protocol is an international greenhouse gas mitigation measure. The 1997 Protocol is the “copy for signature” version of an agreement reached by 160 countries in 1992 at the United Nations-hosted Earth Summit in Rio de Janeiro, Brazil. The agreement seeks to “...establish an international framework to stabilize atmospheric concentrations of greenhouse gases at levels that would prevent dangerous human interference with global climate.”¹

To have the force of international law the protocol must be ratified by 55 countries representing at least 55% of developed countries’ emissions. Under terms of the protocol, the world’s 41 industrialized countries will face legally enforceable greenhouse gas emission targets. With the United States absent from the list of signatories, the protocol requires ratification by Russia if the 55% emissions requirement is to be achieved.

Canada became the 99th signatory of the protocol in December 2002. To fulfill its Kyoto commitments Canada must reduce its greenhouse gas emissions by 6 percent below 1990 levels by 2012.

¹ *The Kyoto Protocol: An Overview*, Bulletin No. 10 of the Northern Climate ExChange, undated, page 1.

Adaptation measures are intended to reduce vulnerability to harm or damage from the bio-physical and socio-economic impacts of climate change. Adaptation measures can be implemented on a sector-by-sector basis, by locality or by type climate hazard. Adaptation measures include:^{vi}

- vulnerability reduction through socio-economic change, policies and provisions
- risk sharing via insurance, disaster relief
- bearing losses as they occur
- event modification (fire control, hail, etc.)
- event prevention (dykes, controlled water releases, etc.)
- modified land uses (new species, alternate building methods, etc.)
- location changes (zoning, timber harvesting, etc.)
- public education and outreach

Mitigation and adaptation measures are not mutually exclusive. Combinations of both types of responses are being applied in all jurisdictions in Canada.

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Yukon Challenges

The major challenge for Yukon in terms of climate change impacts can be summed up in the phrase “first and worst”. Impacts in the Yukon are expected to be more extreme and to be felt sooner than in many southern jurisdictions. Because northerners rely extensively on the land for their livelihood and lifestyle, climate change impacts will also be felt more directly than in southern Canada.

Certain economic and demographic features of the Yukon also present challenges for the Yukon Government in responding to the impacts of climate change. For example, while mineral production has diminished in recent years in the Yukon, a resurgence of carbon-intensive mining sector activity could serve to significantly increase greenhouse emissions in the territory. A similar result is expected to occur with an increase in oil and gas sector activity. At the same time, resource-based industries already face unique challenges operating in a northern environment. Climate change impacts and mitigation requirements and associated uncertainty are creating even more challenges for new resource and infrastructure developments.

In terms of demographics, Yukon’s small and dispersed population can make it challenging to find efficiencies in larger scale initiatives such as mass transit. Yukon’s small population size also tends to increase the per capita costs of mitigation measures. In addition, the Yukon’s cold climate and long travel distances result in relatively high per capita greenhouse gas emission levels.

Our small population size can also make the adaptation of federal programs and services designed and scaled for much larger southern population sizes problematic. The small number of climate change “experts” with hands-on northern experience bespeaks a continued need to build on strong north-south, pan-northern and community relationships required to buttress local knowledge and capacity.

Yukon Opportunities

The Yukon has established itself as a national leader in a number of climate change-related fields such as housing, community-based impacts and adaptation research. As a result, the territory is well positioned to tap opportunities on both sides of the research and development equation for the benefit of Yukon organizations, businesses and individuals.

On the research side, the Yukon has established a strong foundation for advancing climate change impacts and adaptation research, testing and innovation via organizations such as the Northern Climate ExChange and the Energy

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Solutions Centre. The Yukon's geographic location makes it ideally suited as a test site for cold weather and remote site research. The anticipated "first and worst" features of climate change in the Yukon holds the potential for Yukon-based adaptation research to be nationally and globally significant. Existing federal recognition of the unique challenges facing northern and First Nation communities signals opportunity for federal assistance in developing the tools needed to mount an effective climate change response.

On the development side of the equation our small, northern and remote population makes the Yukon an excellent site for market-testing of various products and messages. Such test-marketing efforts will be accompanied by opportunities to replicate findings in southern markets and northern niches. Southern industry is expected to benefit from opportunities to cold-weather-test innovative low-impact and low-emission systems infrastructure.

Yukon businesses, known for their ingenuity and ability to adapt, are also well-positioned to take advantage of local climate change opportunities. For example, building science expertise developed through energy audits, retrofitting and monitoring can be exported to other cold-climate areas of Canada and the world. Similarly, on-grid, off-grid and micro-grid renewable energy expertise (including wind energy) pioneered in the Yukon can be transplanted to other jurisdictions. Potential opportunities which exploit the Yukon's existing energy capacity could include an expanded ground source heat pump market.

Role of the Yukon Government

The Yukon Government cannot solve the many challenges presented by climate change on its own. It can, however, demonstrate leadership by defining its own climate change role to provide clarity for other governments, organizations, agencies and individuals also tasked with responding to climate change. The Yukon Government's strategic vision, guiding principles, goals and priority strategies by which those goals will be achieved are:

Strategic Vision

A northern territory enabled to minimize the negative biophysical and socioeconomic impacts of global warming and positioned to harness new opportunities presented by climate change.

Guiding Principles

The Yukon Government will demonstrate climate change leadership by:

- GP1. focussing actions "at a Yukon scale" by concentrating efforts on challenges and opportunities inherent to our circumstances as a rural northern jurisdiction.
- GP2. building on the Yukon's demonstrated strengths and successes in the areas of community-based northern impacts and adaptations research, energy efficient building science, integrated household energy solutions and applied northern renewable energy research.
- GP3. pursuing beneficial partnerships with other governments (federal/provincial/territorial/First Nation/municipal) and industry through collaborative ventures designed to leverage opportunities and address common challenges.

Goals

- G1. Enhanced awareness and understanding of climate change impacts on the Yukon's environment, culture and economy.
- G2. Reduction of carbon emissions intensity through efficiency improvements in the short term and additional measures appropriately correlated with capital stock replacement in the longer term.
- G3. Resilient Yukon environmental, social and economic systems able to minimize to negative climate change impacts and positioned to take advantage of climate change opportunities.
- G4. Establishment of the Yukon as a leading northern centre for applied climate change research and innovation.

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Priority Strategies

Strategies implemented by the Yukon Government to address the impacts of climate change will build on past efforts and reflect the current climate change challenges and opportunities faced by the territory. The Yukon Government's priority climate change strategies, organized by goal, are described below.

Goal One	Priority Strategies
<p>Enhanced awareness and understanding of climate change impacts on the Yukon's environment, culture and economy.</p>	<ul style="list-style-type: none"> • Foster the creation, collection and dissemination of Yukon-specific climate change information • Retain the results of impacts and adaptation research in the north for use by northerners • Implement research and educational programs based on needs assessments performed in the Yukon for the Yukon, such as the Northern Climate ExChange's <i>Gap Analysis Project</i> • Continue to identify, update, expand and rationalize climate change related databases ensuring ease of access and availability of information relevant to the Yukon and the north • Provide practical advice and support to the Arctic Council's <i>Arctic Climate Impact Assessment</i> project

Goal Two	Priority Strategies
<p>Reduction of carbon emissions intensity in the Yukon through efficiency improvements in the short term and additional measures appropriately correlated with capital stock replacement in the longer term.</p>	<ul style="list-style-type: none"> • Reduce Yukon's dependence on diesel for electrical energy generation • Complete and maintain an energy consumption database to provide baseline data on electricity and heating fuel consumption for Yukon Government buildings • Work with the federal government to ensure that greenhouse gas reporting mechanisms are simple, effective and accurately reflect Yukon emission levels • Develop and deliver training courses so that all Yukon Government employees have the knowledge to make wise energy consumption choices • Integrate energy efficiency criteria into scoring systems used by the Yukon Government for evaluating purchases of goods and services • Enhance the Yukon Government purchasing policy to encourage procurement of low-emission goods and services • Establish energy performance standards for Yukon Government new building construction and renovations which meet or exceed the C2000 standard

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Goal Three	Priority Strategies
Resilient Yukon environmental, social and economic systems able to minimize negative climate change impacts and positioned to take advantage of climate change opportunities.	<ul style="list-style-type: none"> • Incorporate climate change impact measures into existing environmental assessment practices • Assess climate change-related business needs and infrastructure • Design and implement northern-appropriate energy conservation measures and integrated energy efficiency solutions for application in all sectors of the Yukon economy • Develop a comprehensive and flexible Green Government Management Plan for the Yukon Government • Assess and prioritize climate change-related technology and innovation gaps and opportunities

Goal Four	Priority Strategies
Establishment of the Yukon as a leading northern centre for applied climate change research and innovation.	<ul style="list-style-type: none"> • Cultivation of technological ingenuity in addressing climate change challenges through energy conservation and in the pursuit of energy self-sufficiency • Explore and develop the concept of a pan-northern climate change funding mechanism • Calculate and implement minimum energy-use targets for new Yukon homes • Make innovative use of the current Whitehorse-Aishihik-Faro electricity grid over-supply • Integrate climate change innovation efforts with Yukon Innovation Action Plan strategies

Cornerstone Climate Change Agencies

Four key agencies have been established and mandated by the Yukon Government to take action on climate change. As cornerstones for the design, management and delivery of climate change programs and services in the territory, the agencies are responsible for the achievement of the Yukon Government's climate change objectives.

Yukon Climate Change Coordinating Committee (YC4)

An internal government organization with representation from all government departments. It is co-chaired by the departments of Environment, Economic Development and Energy Mines and Resources. The purpose of YC4 is to:

- coordinate the climate change initiatives of all YTG departments;
- provide opportunities for stakeholder and public participation in the development of climate change programs;

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- make climate change legislative and policy recommendations;
- identify program gaps, needs and opportunities;
- devise key performance indicators and evaluate success of climate change programs; and
- initiate key strategic investments in advancing alternative technologies.

Canada-Yukon Energy Solution Centre (ESC)

The Energy Solutions Centre is a service and program delivery agency with a primary mandate to deliver programs aimed at reducing carbon emission intensity in the Yukon. The Centre also strives to increase public awareness and cultivate technological ingenuity. The principle functions of the ESC include:

- delivery of energy efficiency and renewable energy programs in the Yukon;
- dissemination of information on energy efficiency and renewable energy technology and programs;
- provision of access to energy efficiency technical services; and
- outreach and public education activities that mobilize Yukoners to implement projects that will reduce greenhouse gas emissions in the Yukon.

Northern Climate ExChange (NCE)

The Northern Climate ExChange is a partnership between Yukon College and the governments of Canada and the Yukon and was established in response to growing concern over the impacts of climate change on the land, life, and communities of northern Canada. The primary focus of the NCE is to provide the knowledge necessary to minimize negative impacts of climate change and to find ways to build resilience into northern environmental social and economic systems. The NCE is also mandated with increasing awareness through public education and outreach programs. The principle functions of the NCE are to:

- facilitate a clearer understanding of the impacts of climate change on the northern economy, environment and social fabric;
- support the contributions of indigenous peoples to the climate change knowledge base by promoting the acceptance of traditional knowledge and aboriginal expertise;
- increase science and research capacity among northerners and improve the links between scientific and local information;
- contribute to regional and national northern policy decisions and development of policy tools;
- increase general awareness of the issue of climate change, its impacts on the north, and the global benefits of northern-based research;

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- advance a virtual framework for circumpolar climate change research as the University of the Arctic evolves;
- promote the establishment of a series of coordination points in the North to anchor climate change research activities; and
- provide public education and outreach programs on the impacts of, and adaptations to, climate change in the North.

Yukon Housing Corporation (YHC)

Yukon Housing Corporation links families, communities and the housing industry with programs and services that work to support the housing needs of Yukoners. The Yukon housing corporation is leading the country in delivery of the energuide audits aimed at helping home owners reduce heating costs and green house gas emissions. On a per capita basis, there are more R2000 certified homes in the Yukon than in any other jurisdiction in Canada. The Housing Corporation has been mandated with the delivery of programs to assist home owners in using energy efficiently including::

- R2000 certification;
- Energuide program; and
- Green Mortgages.

Building on Our Foundation of Climate Change Success

Addressing the complex challenge of climate change requires effective leadership and continued innovation. Much work has already been undertaken to create a solid foundation of climate change experience and expertise. The Yukon has demonstrated success and received recognition in several climate change-related fields including community-based northern impacts research, building science and energy efficiency and public education initiatives. Examples of the Yukon's recent recognition include:

- In 2003 the Yukon Conservation Society, Yukon Development Corporation and Yukon Energy earned Natural Resources Canada's *National Energy Efficiency Award for Outreach for the House Calls Energy Efficiency Program*.
- For three years running (2000, 2001 and 2002) the Yukon Government has received the top mark in Canada from the Canadian Energy Efficiency Alliance for promoting energy efficiency.

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- In 2002 the Yukon Development Corporation was awarded Natural Resources Canada's *Energy Star Market Transformation Recognition Award* for its Fridge Exchange program.
- In 2002 the Yukon Energy Corporation received the *Natural Outdoor Site and Attraction of International Interest* award from Attractions Canada for the Whitehorse Fish Ladder.
- In 2002 the Whitehorse architectural firm of Kobayashi + Zedda Architects Ltd. was one of three Canadian submissions selected for the Sustainable Building 2002 exhibition held in Oslo, Norway.
- In both 2001 and 2002 Canada's Climate Change Voluntary Challenge and Registry Inc. awarded *Gold Level Reporter* status to Yukon Development Corporation.
- In 2001 YDC received an award from the Canadian Energy Efficiency Alliance for *Outstanding Leadership in Energy Efficiency* along with the *Leadership Award for Small and Medium-size Enterprises* from Canada's Climate Change Voluntary Challenge and Registry Inc.
- In 2001 the Yukon Energy Corporation (John Maissan) received the *R.J. Templin Award* from the Canadian Wind Energy Association for researching the effects of extreme cold weather on Yukon Energy's wind turbines on Haeckel Hill and for designing and installing modifications to improve performance.
- In 1999 the Yukon Energy Corporation received the *National Energy Efficiency Award for Commercial/Industrial Buildings* from Natural Resources Canada for the design and construction of its office building at the Whitehorse Rapids generating facility.

This framework strategy outlines how the Yukon Government will build on the Yukon's foundation of climate change experience and expertise to achieve its climate change vision. Through effective leadership, beneficial partnerships and the coordinated efforts of our four cornerstone climate change agencies the Yukon will be enabled to minimize the negative biophysical and socioeconomic impacts of global warming and become positioned to harness new opportunities presented by climate change.

Endnotes

ⁱ *Summary for Policymakers: A Report of Working Group I of the Intergovernmental Panel on Climate Change*, World Meteorological Organization and the United Nations Environment Programme, January 2001 (various pages).

ⁱⁱ *Measuring the Past*, Bulletin No. 2 of the Northern Climate ExChange, undated, page 1.

ⁱⁱⁱ Ibid.

^{iv} The lists of biophysical and socio-economic impacts presented here summarize impacts described in more detail in *Impacts of Climate Change on Northern Society and Economy*, Bulletin No. 7 of the Northern Climate ExChange, undated, *Impacts of Climate Change on Northern Landscapes*, Bulletin No. 8 of the Northern Climate ExChange, undated, and, *Impacts of Climate Change on Northern Ecosystems*, Bulletin No. 9 of the Northern Climate ExChange, undated.

^v Adapted from John Newton and Ian Burton, *An Exploration of Potential Directions for Climate Change Policy in Northern Canada*, "The Northern Review", Number 24, Winter 2001, page 135.

^{vi} Ibid.