**NWT CLIMATE CHANGE STRATEGIC FRAMEWORK**

**&**

**NWT ENERGY STRATEGY**

**SUMMARY REPORT**

**REGIONAL ENGAGEMENT WORKSHOP**

**YELLOWKNIFE, NWT**

**DECEMBER 5-6, 2016**

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**EXECUTIVE SUMMARY**

The Department of Environment and Natural Resources (ENR) is leading the development of the NWT Climate Change Strategic Framework and the Department of Public Works and Services (PWS) is leading the development of the NWT Energy Strategy. In parallel with this work, the federal Department of Indigenous and Northern Affairs Canada (INAC) is leading the development of a Northern Adaptation Strategy and Health Canada is renewing the Climate Change and Health Adaptation Program.

Given the linkages between these different initiatives, the Government of the Northwest Territories (GNWT), INAC and Health Canada collaborated to organize regional workshops across the NWT to gather input on various energy and climate change issues and concerns.

On December 5-6, an invitational workshop was held at the Explorer Hotel in Yellowknife. A total of 60 people attended the workshop – 10 from Aboriginal, community and regional organizations, 7 from non-governmental organizations, 7 from the private sector, 4 from regulatory or co-management organizations and 28 from GNWT and Government of Canada departments or Crown agencies. In addition to the workshop, a public Open House was held during the evening of December 5th to engage with residents. A guided tour of a 650 kW wood pellet boiler system in a GNWT office building in Yellowknife was offered to workshop participants. Four people attended the energy site tour.

The workshop format involved several different sessions, each of which started with brief presentations, followed by breakout group discussions. The first day of the workshop focused on energy issues and through the breakout groups, two themes emerged throughout all three sessions: the GNWT needs to provide more funding and education to support energy efficiency and conservation initiatives; and communication and partnerships across all levels of government and industry is needed to engage communities in energy projects and strategies.

The first session was led by the Department of Public Works and Services, to outline the NWT’s current energy system, the GNWT’s current renewable energy projects, and information on the potential use of renewable energy technologies in the NWT. Participants stated that when considering energy projects, environmental and socio-economic benefits to the community should be taken into account, with a focus on northern solutions, engineering, traditional knowledge and community input. The groups suggested that the GNWT should facilitate changes to energy in the NWT, however capacity needs to be built at the local level.

The second session opened with a presentation from the Arctic Energy Alliance (AEA) on energy efficiency, energy conservation and AEA programs. The breakout groups noted that existing energy efficiency and conservation programs could be improved through increased collaboration, education and communication between government and industry.

The third session focused on the NWT’s energy future. A carbon tax was discussed extensively amongst participants, and various ideas were proposed for use of potential revenue. It was generally agreed that emissions targets should be explored but must be realistic, sector specific and northern based. Additionally, discussion groups viewed hydro power as a resource that could be further developed in the NWT.

The second day of the workshop focused on climate change impacts and adaptation issues. The sessions had similar topics repeated by participants over the course of the day including: increased planning, communication, support and funding for research, community-based monitoring work, and building resilient communities; and the important role traditional knowledge plays in understanding the effects of climate change.

Environment and Natural Resources led the fourth session and explained climate change impacts, knowledge, monitoring and assessments. During the discussions, participants noted various locally observed climate change impacts in the region, and provided suggestions for priority areas of future risk and vulnerability assessments. Additionally, it was stated that communities could be strengthened through youth with traditional knowledge and on the land training.

The final session explored the concepts of climate change adaptation and resilience. The breakout groups identified positive and negative climate change impacts, with overall concern for the future of mining operations in the NWT, and a desire to ensure industry’s impact on the environment is limited. To build resilient communities and improve climate action in the NWT, participants felt that leadership from within the government and private sectors was necessary. Additionally, expanding the social security net, designing climate change resistant infrastructure (e.g., all-season roads) and recognizing opportunities presented by climate change were actions and ideas that participants felt would increase the climate resiliency of the NWT.

With the feedback received through the engagement process, the GNWT and their federal partners will continue improving and developing the various strategies that will guide energy and climate change issues moving forward.

**TABLE OF CONTENTS**

**EXECUTIVE SUMMARY . . . . . . . . i**

1. **INTRODUCTION . . . . . . . . 1**
	1. Workshop Objectives and Agenda . . . . . 1
	2. Workshop Participants . . . . . . 2
	3. Energy Site Tour . . . . . . . 2
	4. Public Information Session . . . . . . 2
2. **WORKSHOP RESULTS . . . . . . . 3**
	1. Day 1: Energy Strategy . . . . . . 3

Session #1: Renewable and Alternative Energy Development 3

Session #2: Energy Efficiency and Conservation Initiatives . 4

Session #3: Long-term Energy and Emissions Vision . . 5

* 1. Day 2: Climate Change Strategic Framework . . . 7

Session #4: Knowledge, Monitoring and Risk Assessments . 7

Session #5: Resilience and Adaptation . . . . 11

1. **CONCLUSIONS / NEXT STEPS . . . . . 14**

**APPENDIX A . . . . . . . . . 15**

**APPENDIX B . . . . . . . . . 17**

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1. **INTRODUCTION**

To respond to concerns about the impacts of climate change and the need to reduce fossil fuel usage, energy costs and greenhouse gas (GHG) emissions, the Government of the Northwest Territories (GNWT) has committed to develop a NWT Climate Change Strategic Framework and a NWT Energy Strategy.

The Department of Environment and Natural Resources (ENR) is leading the development of the NWT Climate Change Strategic Framework and the Department of Public Works and Services (PWS) is leading the development of the NWT Energy Strategy.

In parallel with the work described above, the federal Department of Indigenous and Northern Affairs Canada (INAC) is leading the development of a Northern Adaptation Strategy that will help strengthen climate change adaptation efforts in Yukon, NWT, Nunavut, Nunavik (northern Quebec) and Nunatsiavut (northern Labrador). As well, Health Canada is renewing its Climate Change and Health Adaptation Program (CCHAP) which provides funding to address human health impacts resulting from climate change.

Given the linkages between these different initiatives, the GNWT (ENR and PWS) organized regional workshops across the NWT to gather input from Aboriginal organizations, community governments, institutions (regulatory, planning, co-management), business and industry, non-governmental organizations and residents on various energy and climate change issues and concerns. INAC and Health Canada provided financial and technical support to the GNWT for these workshops and sent representatives to most of the workshops.

On December 5-6, an invitational workshop was held at the Explorer Hotel in Yellowknife. A guided tour of a GNWT wood pellet boiler facility in downtown Yellowknife was provided to participants immediately following the first day of the workshop. To engage with residents, a public Open House session was held during the evening of December 5. A facilitator was hired to provide support during the workshop.

* 1. **Workshop Objectives and Agenda**

The main objectives for the workshop were to:

* Discuss content for the NWT Climate Change Strategic Framework;
* Discuss energy planning and the NWT Energy Strategy; and,
* Discuss regional concerns, priorities and actions.

The workshop started with greetings from the facilitator and some opening remarks from Mr. John Vandenberg (Assistant Deputy Minister, Energy Planning, Public Works and Services). Mr. Ernest Betsina (Chief, Yellowknives Dene First Nation) followed with a prayer and a welcome and Ms. Shauna Morgan (Councillor, City of Yellowknife) provided comments on the City’s community energy planning efforts.

The opening comments were followed by a short presentation to provide the participants with an overview of the topics for discussion and explain how the participants’ feedback would be used to help inform the various climate change and energy initiatives under development. A presentation was also provided to introduce the participants to INAC’s Northern Renewable Energy Approach for Community Heat and Electricity (REACHE) program. The balance of the first day focused on energy supply, energy efficiency and energy visioning.

The second day started with presentations about Health Canada and INAC climate change funding programs, then focused on climate change impacts, monitoring, risk and vulnerability assessments, and adaptation planning and projects.

A copy of the agenda is provided in Appendix A.

* 1. **Workshop Participants**

In total, sixty (60) participants attended the workshop. A breakdown of the participants is:

* 10 participants from Aboriginal, community and regional organizations
* 7 participants from non-governmental organizations
* 7 participants from the private sector
* 4 participants from regulatory or co-management organizations
* 28 participants from GNWT and Government of Canada departments and Crown agencies

A list of the participants is provided in Appendix B.

* 1. **Energy Site Tour**

A guided tour of a 650 kW wood pellet boiler system in a GNWT office building was offered to workshop participants. The system has been offsetting heating fuel usage for the new building in addition to two other buildings in downtown Yellowknife and is expected to displace approximately 275,000 liters of heating oil annually. The tour was facilitated by PWS staff from 4:15 to 5:00 and was attended by four participants.

* 1. **Public Information Session**

During the evening of December 5, 2016 a public Open House was held at the Explorer Hotel to provide information about the workshop and the various topics and initiatives under discussion. The Open House was attended by approximately 20 people and lasted from 7:00 to 8:30 pm.

1. **WORKSHOP RESULTS**

The format for the workshop consisted of a series of sessions that focused on different topics. On Day 1, there were three energy sessions and on Day 2 there were two climate change sessions. Each session started with brief presentations, followed by breakout group discussions and ended with reports back from each breakout group to the plenary group.

The results of all the breakout group discussions were recorded. During each session, the breakout groups prepared three key messages, based on their discussion results. The results are summarized below.

* 1. **Day 1: Energy**

**Session #1: Renewable and Alternative Energy Development**

Session #1 started with two presentations from Public Works and Services. The first presentation, entitled “2017 Energy Strategy” provided information on the NWT’s current energy system, including statistics on the NWT’s energy supply and usage, energy costs and greenhouse gas emissions. The priorities used by the GNWT for energy planning purposes were also mentioned. The second presentation, entitled “Renewable and Alternative Energy” outlined the GNWT’s current renewable energy projects and provided some background on the pros and cons of using different renewable energy technologies (solar, wind, hydroelectricity, and biomass) in NWT communities.

The breakout groups used the following questions to help initiate and support their discussions:

* How do you want to get involved in energy projects?
* How can your community become an energy leader?
* How can the GNWT support energy projects?
* What renewable or alternative energy technologies would be best for your community? Why?

The key themes and results from this session included:

* *Project values –* When renewable and alternative energy projects are being considered and evaluated, cost should not be the only driver to assess the feasibility of the project. Environmental and socio-economic benefits to the community should be considered.
* *Northern solutions* – Focus on northern solutions, engineering, traditional knowledge (TK) and community input to develop renewable and alternative energy projects.

* *Studies and research –* Participants felt that the NWT has done enough studies on renewable and alternative energy and needs to begin acting on these studies. Organizations should quickly begin using these studies, research papers and traditional knowledge to develop renewable and alternative energy projects.
* *Communication and awareness* – Communities need to be engaged on projects early in their development. The youth need to be trained to work on energy projects. ‘Plug and play’ projects often don’t fit with a community’s specific needs, and early engagement is key to avoid this.
* *Leadership -* Communities need to lead by example so that capacity can be built at the local level. Community champions are needed and must be accountable to ensure that the community’s issues and concerns are dealt with.
* *Government support* – Political and cabinet level direction is needed to drive and facilitate changes to energy in the NWT. A team of experts should be formed to advise the government on energy issues and help communities.
* *Environmental Assessment* – Life cycle environmental assessments are important when assessing new energy projects and local impacts to the land and environment need to be considered when developing new energy sources.

**Session #2: Improving Energy Efficiency and Conservation**

Session #2 opened with a presentation from the Arctic Energy Alliance (AEA) on energy efficiency, energy conservation and AEA programs. A number of different energy efficiency measures and funding programs were described.

The breakout groups used the following questions to help initiate and support their discussions:

* What can we all do to improve our energy use?

• How would you improve energy efficiency programs (access and what they cover)?

• What can be done at the community level to improve efficiency?

• What can the GNWT do to help Northerners overcome barriers to being more efficient?

The key themes and results from this session included:

* *Industry and government communication -* There needs to be better communication and collaboration between industry, businesses and government on how energy efficiency and conservation can be improved at the industrial and business levels, and what initiatives could be developed to help.
* *Expand programs and increase funding-* Energy efficiency and conservation programs need to be developed that focus on high-energy sections of the NWT, such as programs for landlords so that renters can also improve their energy usage and programs for industry to increase their use of renewable energy. Existing programs could be improved, through increased rebates and covering the entire cost of energy efficient appliances for low-income families. Increased funding for these current and new programs will allow them to have more impact across the NWT.
* *Education and communication* - Education on energy efficiency, conservation and how energy systems work should be included in school curricula to improve understanding of energy at a young age. Information on current programs needs to be better communicated to increase awareness of what’s available. Examples include: social media, pamphlets in power bills with ideas for improvements, and NWT-specific information online.

**Session #3: Energy Visioning**

Session #3 opened with a brief presentation on what the NWT’s energy future might look like. It was noted that 25 of the NWT’s 33 communities are remote and rely on imported diesel fuel for electricity and heating. This isn’t sustainable in the long term so what should the NWT’s energy sector look like in the future?

The breakout groups used the following questions to help initiate and support their discussions:

* How can we work as partners to support the transition to using less fossil fuels?
* Should the NWT set a price on fuel as proposed by the federal government?
* How should money from a carbon tax be spent?
* Should the NWT set greenhouse gas emission or renewable energy targets as part of its vision?
* What types of projects can make significant contributions to keeping our energy costs stable and also reducing our GHG emissions?

The key themes and results from this session included:

* *Research and partnerships* – The federal and territorial governments should work together with communities to identify projects and research priorities. Engage with communities to develop projects and work on solutions builds capacity and creates stronger products in the end.
* *Carbon tax revenue:*
* Revenue from a carbon tax should be used to support partnerships between governments and communities with the goal of developing alternative and renewable energy projects. It could also be used to support low-carbon projects at the local level (e.g., use recycling waste to manufacture or produce products in the NWT, as opposed to trucking it south).
* Revenues should be used to help low income families and protect residents from higher energy costs.
* Revenues should be disbursed based on need, not just in cities or towns that have larger populations. Communities that are reliant on diesel should be prioritized so that they can reduce their diesel usage for heating and power generation.
* Industry will pay significant dollars under a carbon tax. They should be able to benefit from this revenue, through incentives for renewable energy, funding for energy efficient upgrades, or some other mechanism.
* *Emissions targets -* Targets should be sector specific and northern based and not based on southern standards. It should also be recognized that for certain sectors, targets will be difficult to achieve (e.g., transportation). What is realistically feasible for each sector needs to be considered when setting emissions targets. Interim targets may be needed to help the NWT transition to long term targets and a plan should be developed that includes specific actions to achieve the targets.
* *Industry –* As mines and industry are the largest emitters of GHG in the NWT, setting emissions targets and a carbon tax requires planning, and industry involvement in decision making.
* *Hydro expansion:*
* The Taltson Hydro expansion could benefit from selling power to other markets, and these profits should be used to stabilize or lower NWT power rates. The project would provide business opportunities for First Nations for contracting and ownership if the project is developed. Since Taltson is already operating, expansion would not cause new flooding and environmental impacts would be low.
* The Mackenzie River also has significant hydro potential that could be developed.
* The GNWT should consider hydro as a power source for industry through power purchase agreements with customers.
* *Energy conservation* - Financial resources should be put into energy efficiency and conservation incentives and programs.
	1. **Day 2: Climate Change Knowledge, Resilience and Adaptation**

**Session #4: Climate Change Impacts, Knowledge and Monitoring**

Session #4 opened with a presentation entitled “Climate Change Impacts and Knowledge” that showed current and potential climate impacts in the region and explained the importance of gathering knowledge about these impacts to guide decision-making and support adaptation efforts. Two key sources of knowledge include scientific research and monitoring, and traditional and local knowledge. The presentation outlined different approaches to monitoring and explained how risk and vulnerability assessments can be used as a tool for understanding the implications of climate change for planning purposes.

The breakout groups used the following questions to help initiate and support their discussions:

* Research & Monitoring - what are the gaps or priorities that communities are concerned about? How can government (Federal, GNWT, Regional) best work with researchers and communities to support research and monitoring projects and share results?
* Community-based Monitoring - are communities interested in having more community-based monitoring activities? What kinds? What is required to make this happen?
* Risk / Vulnerability Assessments - what are the risk / vulnerability gaps and priorities that communities are concerned about?
* How should traditional and local knowledge be accessed and used?

The key themes and results from this session included:

* *Planning, communication and funding* – Participants provided the following suggestions for improvement regarding climate change-related research and monitoring work:
	+ Traditional knowledge and scientific knowledge need to be brought together to strengthen understanding, and support planning and decision-making.
	+ There should be better coordination and communication between governments, researchers and communities, including providing key results from research and monitoring work to decision-makers, and establishing standards for research so that results can be compared.
	+ A strategic research plan should be developed and southern researchers should be working on northern priorities and needs, rather than their own pre-determined ideas. The use of a centralized database to keep track of research and monitoring projects, and help share results was also suggested.
	+ Communities often do not receive any results or information once research or monitoring projects are finished. Suggested methods for communicating results or findings to communities include radio, posters, the Internet, and meetings depending on the target audience.
	+ There is a lack of funding and capacity at the community level. Government needs to provide stable, multi-year funding to support community-based research and monitoring work.
	+ Given the vast size of the NWT, it is difficult to monitor everywhere. Development provides an opportunity for government and industry to create partnerships to increase monitoring efforts and share results.
	+ It isn’t clear how (or if) all the data collected through research and monitoring is used by decision-makers.
* *Organization of climate research and data –* Participants felt that improvements were needed in regards to how the GNWT collects and makes data available, such as the consolidation of all climate-related research and data in one location and improved accessibility of industrial and academic research pertinent to NWT residents. These improvements would allow better coordination of past and current research and monitoring, and better identification of gaps in knowledge.
* *Locally observed climate change impacts* – During the various discussions, participants noted various impacts in the region. Impacts that affected travel, such as weakened ice conditions and permafrost disturbances on highways, as well as those that impacted safety, such as more numerous and severe forest fires, were of particular concern.
* *Research and monitoring gaps* – As the climate changes, participants agreed that more monitoring and research work is needed to establish baselines and understand what is happening. Particular areas of concern include:
	+ Insufficient baseline data in many areas. Addressing this gap should be a priority in order to be able to understand the impacts that are occurring (i.e., what is related to climate change and what is related to development).
	+ The impacts on water quality and availability, increasing bank erosion, increased sediments in the water and potential increases in mercury levels. Other water-related concerns include:
		- The acidity of lakes and rivers in the NWT;
		- How ocean acidification might impact the NWT’s water sources;
		- Contamination of the Slave River due to upstream activities in Alberta;
		- Increased movement of groundwater and the release of contaminants from thawing permafrost or mining operation sumps; and
		- Changes in water levels impacting hydroelectricity generation.
	+ Changes in animal migration patterns need to be better understood. It was recognized that the NWT Cumulative Impact Monitoring Program does address this but it was felt that the work is underfunded.
	+ Increased human health monitoring.
	+ Determining how climate change may affect industry in the NWT (i.e., viability of winter roads).
	+ Using the results of increased monitoring to support better decision-making.
* *Government support for research and monitoring* – Various suggestions were offered on how government could better support research and monitoring:
	+ Help create community strategic plans that take climate change into account. The potential benefits could include better sharing of resources, improved communication, protection of vulnerable species and individuals, and identification of future opportunities from climate change.
	+ Government needs to provide funding for communities to be involved in research and monitoring activities and to support TK studies. Elders need to be paid fairly for their time and knowledge.
	+ Government should support the training of local people to conduct community-based monitoring efforts.
	+ Action on climate change needs to be taken now, as delayed action may result in more expensive consequences.
	+ Some of the funding needed for research, monitoring or adaptation actions could come from carbon tax revenues.
* *Community-based monitoring* – There was a definite interest in more community-based monitoring. Participants provided suggestions on how to make improvements and identified specific areas of interest to focus on:
	+ Land-users have detailed knowledge of the land and have traditional and local knowledge that should be used to help plan community-based monitoring initiatives.
	+ TK can help fill gaps in understanding, knowledge or historical data.
	+ Funding is required to support community-based monitoring efforts.
	+ The GNWT could help improve the coordination of community-based monitoring work and support a more holistic approach to monitoring (i.e., look at ecosystems across boundaries).
	+ Suggested areas to focus on for community-based monitoring include:
		- Water quality and quantity (water flows, droughts, contamination, impact of dams, glaciers melting, etc.);
		- Air quality (increasing forest fires and associated health impacts);
		- Arsenic contamination due to climate change around Yellowknife;
		- Changes in animals (migration routes, invasive species, hybridization of species, diseases, new insects, changes in health);
		- Marine monitoring (fish); and,
		- Environmental monitoring for development projects.
* *Risk & vulnerability assessments* – potential impacts on water quality, water availability, and the transportation system of the NWT were noted as gaps in risk and vulnerability assessments. How climate change may be affecting the well-being of communities, and using this knowledge to determine community resiliency and resource allocation, was also put forward as a needed assessment.

* *Accessing and using traditional and local knowledge* – Participants recognized that communities have information to provide and that the access and use of traditional and local knowledge must be done in a respectful and appropriate manner. Some specific comments included:
	+ TK holders need to be paid for their time and contributions.
	+ TK is very important when trying to understand the effects of climate change and how it affects people living on the land. Western science and TK need to work together to help understand climate change as each has a specific role. Western science is good at looking at a specific question or monitoring a specific indicator, whereas TK can be used to monitor the land as a whole and provide a more holistic view.
* *Youth -* The youth need to spend more time on the land to understand traditional knowledge and develop their skills to be able to live on the land. By educating them on climate change and teaching them on-the-land skills, they can help their community, by being a strong voice when working with government and researchers.

**Session #5: Climate Change Adaptation and Resilience**

Session #5 started with a presentation entitled “Adaptation and Resilience” that defined the concepts of adaptation and resilience and explained how an adaptive management approach can be used to support planning and decision-making efforts when there is uncertainty about how the climate is changing. The presentation went on to outline four categories of climate resilience and adaptation action: ecosystem management; infrastructure and built environment; health and public safety; and culture and heritage.

The breakout groups used the following questions to help initiate and support their discussions:

* Do the following four categories – Ecosystems, Infrastructure, Health and Safety and Culture and Heritage – capture the impacts and adaptation actions you are most concerned about?
* Within these four categories, what impacts are you most concerned about in your region or community? What specific adaptation actions do you think would help address these impacts?
* What opportunities could climate change bring to this region?
* What barriers are there to resilience and adaptation planning and/or actions? How can these barriers be overcome?
	+ Are there examples of successful climate change collaborations in your community between groups, agencies and businesses? What factors have contributed to the success of these collaborations?

The key themes and results from this session included:

* *Understanding, planning for and communicating impacts –* These three steps allow communities, organizations, governments and businesses to properly build resilience to climate change impacts. Understanding of climate change impacts, through research and monitoring, and incorporating this information into planning and decision making builds resiliency at a high level. The communication of this information helps individuals, as well as small-businesses and organizations, make day-to-day decisions and take action on current or predicted impacts. This involves increasing monitoring and research in the NWT, incorporating climate change considerations into all decision making processes, and building or strengthening communication networks across the NWT. It was felt by some participants that the GNWT did not do a good job of disseminating technical information about climate change to communities, especially in terms of infrastructure impacts.
* *Climate change impacts to the NWT economy* – Both negative and positive impacts on the NWT economy were noted by participants, including increased cost of business (with carbon pricing), reduced season of winter roads, and new opportunities in renewable energy technology, tourism and agriculture. Participants realized the importance of large resource extraction projects in the NWT economy and expressed concerns about climate change policies (e.g., carbon taxation) or impacts (e.g., shortened winter road seasons) potentially resulting in the closure of mining operations. This was balanced by a desire to make industry in the NWT as sustainable as possible – limiting its impact on the environment and reducing fossil fuel consumption from large emitters.

Positive economic opportunities noted for the NWT economy were an increase in population growth and forest growth, shipping opportunities through the Northwest Passage, and research opportunities involving climate change impacts and new technologies in cold weather climates. The NWT Heritage Fund was identified as a tool that could aid in future adaptation efforts. The GNWT would put money in the Fund now to be used for adaptation projects in the future as the impacts of climate change worsen.

* *Proposed impact categories work well* – The four impact categories – environment, infrastructure, health and safety, and culture and heritage – make sense as a way to organize climate change impacts and adaptation actions. Participants noted that categorizing impacts can often be difficult, but that it allows specific actions and targets for each area. The coordination of projects across all categories, regardless of how they were divided, was mentioned as an important requirement to successful adaptation.
* *Leadership needs to set direction* – Participants across several breakout groups noted that strategic thinking and planning will allow the NWT to be more resilient to climate change impacts. Waiting for climatic disasters to make change isn’t a viable option; the NWT, specifically leaders within the government and private sectors, needs to be proactive in adapting to climate change impacts and building resilient communities and businesses. The NWT has an opportunity to become a leader in climate change adaptation and greenhouse gas mitigation and should seize this opportunity.
* *Improving resiliency in communities –* Conversation about resiliency was scattered throughout the discussions. Participants noted that it is difficult to measure this within a community, but strengthening a community from a social aspect was the best way to have resilient communities. Actions within the ‘Culture and Heritage’ section of the Climate Change Strategic Framework could help build social resilience in communities, as could improvements to the social safety net. Other suggested ways to build more resilient communities included: all season road access to all NWT communities; recognizing opportunities associated with climate change impacts and taking advantage of them; fostering innovation and economic diversification within communities; settling land claims in the NWT; and involving more youth and community members in traditional activities, facilitating the spread of traditional knowledge.
* *Specific impacts of concern –* The following impacts were identified amongst the groups as having impacts to the North Slave region:
	+ The weakening of ice, including shortened winter road seasons and increased risk while traveling on the land.
	+ Increasing number and severity of forest fires in the NWT.
	+ Changes in animal behaviour, including migration patterns, invasive species, and impacts these changes will have on traditional practices, such as hunting.
	+ Changes in precipitation, such as wetter snow and low water levels in lakes.
	+ Changes in roads due to permafrost disturbances (e.g., Highway 3, Behchoko to Yellowknife).
* *Traditional knowledge* – Throughout the discussions on climate change it was noted that traditional knowledge plays a key role in building resiliency. Improving use and availability of TK will result in more resilient communities, capable of withstanding negative climate change impacts.
* *Barriers to climate change adaptation* – Poor sharing, evaluation and accessibility of climate data, lack of acceptance of the inevitability of climate change, lack of money for adaptation, and difficulties bridging the gap between traditional knowledge and western science were noted as important barriers to climate change action in the NWT. A point noted by several breakout groups was that accepting climate change impacts and predictions was critical to adapting to climate change. Moving past fighting climate change, embracing the predicted changes, and working on actions that limit negative changes or embrace potential benefits might be a more worthwhile use of resources.
1. **CONCLUSIONS / NEXT STEPS**

During the two-day workshop, the six key themes throughout were:

* The need for stronger partnerships and collaborations on energy projects, and resilience and adaptation efforts;
* The need for traditional and local knowledge to be used appropriately to strengthen projects and decisions in the NWT;
* The need for environmental consideration and monitoring during all stages of energy projects;
* The need for stronger communication by governments on energy solutions, climate change impacts and adaptation;
* The need to consult with stakeholders prior to implementing climate change adaptation initiatives; and,
* The need for increased funding for energy projects, climate monitoring and climate change adaptation.

All of these concerns suggest a necessity for improved collaboration between different levels of government (federal, territorial, Aboriginal, and local), industry, researchers and academics, and other key organizations (Arctic Energy Alliance, NWT Association of Communities, Ecology North, etc.).

At the end of the workshop, GNWT representatives thanked the participants for their time and generosity in sharing their knowledge and ideas. Participants were advised that the workshop results would be captured in a summary report that would be distributed to all participants.

Looking forward, the GNWT and its federal partners (INAC and Health Canada) will use the workshop results to help inform their respective initiatives, which include:

* NWT Energy Strategy (GNWT);
* NWT Climate Change Strategic Framework (GNWT);
* Northern Adaptation Strategy (INAC); and,
* Climate Change and Health Adaptation Program (Health Canada).

**APPENDIX A: WORKSHOP AGENDA**

YELLOWKNIFE INVITATIONAL WORKSHOP

Explorer Hotel, December 5 & 6, 2016

**Day 1 – DECEMBER 5**

ENERGY: HOW DO WE ADAPT AND MITIGATE OUR ENERGY USAGE?

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**8:30 – 9:00 Doors open – Coffee and conversation**

**9:00 – 9:30** Opening Comments

Review of Workshop Agenda

**9:30 – 10:15** Setting the Stage: Opening Presentations on Climate Change and Energy

**10:15 – 10:30 Break**

**10:30 – 11:15** Presentations:Introduction to Energy in the NWT

 Renewable and Alternative Energy

**11:15 – 12:15** Group Work #1: Supporting Renewable and Alternative Energy Development

Participants will discuss and identify renewable and alternative energy solutions.

**12:15 – 1:15 Lunch on site**

**1:15 – 1:30** Presentation: Energy Efficiency and Conservation

**1:30 – 2:30** Group Work #2: Improving Energy Efficiency and Conservation

Participants will discuss these initiatives and additional initiatives they would like to see.

**2:30 – 2:45 Break**

**2:45 – 3:00** Presentation: Electricity – Long Term Vision

**3:00 – 4:00** Group Work #3: Developing a Long Term Vision for Energy in the NWT

Participants will discuss a long-term energy vision for the NWT.

**4:00 – 4:15** Day 1 Wrap-up

**4:15 – 5:00** Guided Tour for Participants (optional)

**7:00 – 9:00** Information Session – Open to the Public

YELLOWKNIFE INVITATIONAL WORKSHOP

Explorer Hotel, December 5 & 6, 2016

**Day 2 –DECEMBER 6**

CLIMATE CHANGE: KNOWLEDGE, RESILIENCE AND ADAPTATION

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**8:30 – 9:00** Doors open – Coffee and conversation

**9:00 – 9:15** Re-cap of Day 1 and Review of Day 2 Agenda

**9:15 – 9:30** Presentations: Climate Change and Health Adaptation Program (CCHAP)

 Climate Change Preparedness in the North

**9:30 – 9:45** Presentations:Climate Change Impacts and Knowledge

 Climate Change Monitoring and Risk/Vulnerability Assessments

**9:45 – 10:30** Group Work #4:Climate Change Knowledge and Monitoring - Research Priorities and Projects

 Participants will identify knowledge and research gaps and priorities, as well as discuss monitoring programs and risk/vulnerability assessments.

**10:30 – 10:45 Break**

**10:45 – Noon** Group Work #4 (continued)

**Noon – 1:00 Lunch on site**

**1:10 – 1:30** Presentation:Climate Change Adaptation and Resilience

**1:30 – 3:00** Group Work #5: Climate Change Adaptation and Resilience

Participants discuss how to plan and prioritize resilience and adaptation projects in the areas of ecosystem management; built environment and infrastructure; health and safety; and culture and heritage.

**3:00 – 3:15 Break**

**3:15 – 3:45** Energy and Climate Change Wrap-up

**APPENDIX B: LIST OF PARTICIPANTS**

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| **Name** | **Organization** |
| Andrew Robinson | Alternatives North |
| John Carr | Arctic Energy Alliance |
| Louie Azzolini | Arctic Energy Alliance |
| Chris Vaughn | City of Yellowknife |
| Mike Auge | City of Yellowknife |
| Alexandra Hood | De Beers |
| Sean Whitaker | De Beers |
| David Wells | Diavik Diamond Corporation |
| Dustin Chaffee | Dominion Diamond Corporation |
| Brenda Van Hauvart | Ecology North |
| Chloe Dragon Smith | Ecology North |
| Lyle Fabien | Ecology North |
| Marissa Oteiza | Ecology North |
| Brandy Dallard-Bealne | Environment and Climate Change Canada |
| Abigail Alty | Environment and Natural Resources |
| Ben Linaker | Environment and Natural Resources |
| Brian Sieben | Environment and Natural Resources |
| Heather Beck | Environment and Natural Resources |
| Lisa Dyer | Environment and Natural Resources |
| Rob Marshall | Environment and Natural Resources |
| Tom Lakusta | Environment and Natural Resources |
| Leanne Tait | Facilitator |
| Arthur Beck | Fort Resolution Metis Council |
| Shawn McKay | Fort Resolution Metis Council |
| Tom Unka | Fort Resolution Metis Council |
| Wildfred Beaulieu | Fort Resolution Metis Council |
| Louie Dumulon | Health Canada |
| RJ Carr | Health Canada |
| Félix Mercure | Indigenous and Northern Affairs |
| Marie-Ève Néron | Indigenous and Northern Affairs |
| Yves Thériault | Indigenous and Northern Affairs |
| Anusa Sivalingam | Industry, Tourism and Investment |
| Tejas Kashyap | Industry, Tourism and Investment |
| Robyn Paddison | Mackenzie Valley Environmental Impact Review Board |
| Ruari Cathew | Mackenzie Valley Environmental Impact Review Board |
| Cheri-Ann MacKinlay | Natural Resources Canada |
| John Doornbos | Natural Resources Canada |
| Shin Shiga | North Slave Metis Alliance |
| Christina Chorostkowsi | Northland Utilities |
| Jay Pickett | Northwest Territories Power Corporation |
| Joshua Clark | Northwest Territories Power Corporation |
| Matthew Miller | Northwest Territories Power Corporation |
| Pam Coulter | Northwest Territories Power Corporation |
| Mike Bradshaw | NWT Chamber of Commerce |
| Richard Morland | NWT Chamber of Commerce |
| Linda Golding | NWT/NU Association of Engineers and Geoscientists |
| Andrew Stewart | Public Works and Services |
| Doug Morrison | Public Works and Services |
| Eileen Marlowe | Public Works and Services |
| John Vandenburg | Public Works and Services |
| Peter Lennie-Misgeld | Public Works and Services |
| Remi Gervais | Public Works and Services |
| Robert Sexton | Public Works and Services |
| Patty Ewaschuk | Wek'eezhii Land and Water Board |
| Ambe Chenemu | Yellowknives Dene First Nation |
| Ian Ziemann | Yellowknives Dene First Nation |
| Joanne Black | Yellowknives Dene First Nation |
| Ally MacInnis | YK 1 School District |
| Cassandra Adamache | YK 1 School District |
| Isabel Wilson | YK 1 School District |
| Sai Kottagajula | YK 1 School District |