**NWT CLIMATE CHANGE STRATEGIC FRAMEWORK**

**&**

**NWT ENERGY STRATEGY**

**SUMMARY REPORT**

**REGIONAL ENGAGEMENT WORKSHOP**

**INUVIK, NWT**

**NOVEMBER 1-2, 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 November 1-2, 2016 an invitational workshop was held at the Ingamo Hall in Inuvik. In addition to the workshop, a public Open House was held during the evening of November 1st to engage with residents. A total of 49 people attended the workshop – 27 were representatives of Aboriginal, community, and regional organizations, 2 were from non-governmental organizations, and 20 were from GNWT and Government of Canada departments or Crown agencies. A total of twenty three people participated in two guided energy site tours in Inuvik. The first tour was of Inuvik’s East Three School to look at the energy efficiency features of the school and the second tour was of the Northwest Territories Power Corporation’s liquefied natural gas facility.

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 breakout groups several themes reoccured throughout all three sessions: better communication, outreach and education on energy issues and solutions; reduction of energy usage; provision of flexible and customized programming; and offering more funds towards community energy plans.

The first session was led by PWS to outline the NWT’s current energy system, the GNWT’s renewable energy projects, and information on the potential use of renewable energy technologies in the NWT. Funding and support were discussed prominently in the breakout groups, specifically the need for support in the implementation of local energy projects and the more efficient use of already available energy funds and resources. There was clear recognition that all levels of government need to work together with communities. Groups identified the need for increased sharing of information, particularly with other circumpolar jurisdictions.

The second session opened with a presentation from the Arctic Energy Alliance (AEA) on energy efficiency, energy conservation and AEA programs. The breakout groups discussed improvements to energy use and energy efficiency programs at an individual and community level. It was suggested that energy efficiency programs be targeted at building types and users, particularly the largest energy users. Participants also considered ways the GNWT can help Northerners overcome efficiency barriers, such as addressing energy use in rental and public housing, and expanding incentive programs, like those offered by AEA.

The third session focused on the NWT’s energy future. To foster and support the transition to a lower carbon economy, participants recommended the study of energy potential in the NWT to see what local energy resources are available. There was support for wind development; however concern was expressed regarding hydro projects in the NWT and neighbouring provinces. Contributors stated that a carbon tax should not be implemented as the cost of living in the Beaufort Delta region is already very high. Furthermore, the NWT should assume a leadership role in tackling climate change and set emissions targets. It was noted that this could be a disincentive to local business investment. Lastly, participants expressed that to aid in the development of projects, land claims should be settled and partnerships should be explored.

The second day of the workshop focused on climate change impacts, knowledge and adaptation issues. The sessions had similar topics repeated over the course of the day including the need for better education and communication; more funding and capacity-building; the potential loss of culture and artifacts due to the effects of climate change; the potential impacts on human health owing to food insecurity and natural disasters; and the threats to animals and ecosystems from changing environments.

Environment and Natural Resources led the fourth session on climate change impacts, knowledge, monitoring and assessments. The breakout groups expressed a strong interest in the development of additional community-based monitoring programs, incorporating more local involvement in the identification, planning and completion of research and monitoring projects, with permafrost, water quality, erosion and the ecosystems of the NWT being the priorities. It was noted that Traditional Knowledge needs to hold more value, and researchers need to be trained to access and use it appropriately. Groups suggested ideas for additional risk and vulnerability assessment work, including potential impacts on water quality from thawing permafrost, and future viability of current ice roads.

The final session explored the concepts of climate change adaptation and resilience. From the discussion groups, there was general agreement on the need to focus on the vulnerabilities that impact humans and significant areas of concern are water, permafrost, and animals – especially fish and invasive species. The Beaufort Delta ecosystem in particular was noted as being unique and strongly affected by global environmental impacts. Participants raised concern with respect to infrastructure, notably the effect of climate change on buildings and transportation. Several common themes were identified relating to health and safety, including water quality and quantity, permafrost thaw slumps and landslides, and changing ice conditions.

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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 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 the 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, and 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 had representatives at most of the workshops.

On November 1-2, 2016 an invitational workshop was held at the Ingamo Hall in Inuvik. To engage with residents, a public Open House session was held during the evening of November 1, 2016. A facilitator was hired to provide support during the workshop. Two energy site tours were provided for participants in Inuvik following the first and second day of the workshop.

* 1. **Workshop Objectives and Agenda**

The main objectives for the workshop:

* 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 and opening comments from Ms. Bobby Jo Greenland-Morgan (President, Gwich’in Tribal Council), Mr. Jim McDonald (Mayor, Town of Inuvik), Mr. Gerald Inglangasuk (Chairperson, Inuvik Community Corporation) and Mr. Peter Clarkson (Beaufort Delta/Sahtu Regional Director, Department of the Executive).

After the opening remarks, there was a brief 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. The balance of the first day focused on energy supply, energy efficiency and energy visioning. The second day started with brief presentations from INAC and Health Canada and 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, 49 participants attended the workshop. A breakdown of the participants is below:

* 27 participants from Aboriginal, community, and regional organizations
* 2 participants from non-governmental organizations
* 20 participants from GNWT and Government of Canada departments and Crown agencies

A list of the participants is provided in Appendix B.

* 1. **Energy Site Tours**

Immediately following the first day of the workshop, PWS regional staff provided a tour of Inuvik’s East Three School. The tour highlighted the energy efficiency components of the school’s design and installation. A tour of NTPC’s liquefied natural gas facility in Inuvik was also provided at the end of the second day of the workshop. NTPC’s regional director toured fifteen participants through the facility.

* 1. **Public Information Session**

The evening of November 1st a public Open House session was held at Ingamo Hall to provide information about the workshop and the various topics and initiatives under discussion. The Open House was attended by six people and lasted from approximately 7:00 to 8:00 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 brief reports back from each breakout group to the plenary group.

The results of all the breakout group discussions were recorded and are summarized below.

* 1. **Day 1: Energy**

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

Session #1 started with two brief 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 (GHG) 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:

* What do you see as most important for the GNWT to consider when assessing energy projects? (For example: climate change, local pollution, ownership, local economic impacts, direct costs to residents, etc.)
* What renewable or alternative electricity technology would be best for your community? Why?
* What renewable or alternative heating or transportation technology would be best for your community? Why?
* How should your community be involved and consulted when energy projects are being developed?

The key themes and results from this session included:

* *Better communication and outreach* – There was a strong consensus on the need for better communication and outreach on energy issues and solutions. Communities, businesses and residents need information on what terms mean (i.e., kWh), how to use energy wisely and how to access programs and funding sources to support projects.
* *Switch to local energy sources* – There was a strong desire to make better use of local energy resources. Specific energy sources discussed included local natural gas, biomass, wind, solar, geothermal and waste products. For example, in Inuvik there are natural gas reserves of 3 trillion cubic meters, yet the NWT is importing it from British Columbia.
* *Community energy planning and consultations* – There needs to be recognition of differences in community energy needs as well as community buy-in for projects and initiatives. This can be done through community energy plans or community consultations using a “bottom-up” approach.
* *Building strong partnerships* – There was clear recognition that the Federal Departments, GNWT Departments, Aboriginal governments and communities need to work together. This collaborative approach should include planning (as noted above) and cost-sharing on project costs or capital investments. It was also noted that communities and municipalities cannot take on large-scale projects on their own.
* *Implementation support* – A number of suggestions were made on how to better support the implementation of local energy projects including funding for local capacity and providing funding on a multi-year basis to enable flexibility on the completion of project work (to accommodate transportation limitations).

• *Invest in community energy leaders* - Leaders could be supported through programs such as Catalyst 20/20 which is a federally funded program to build energy leadership.

• *Provide results of demonstration projects* – More sharing of information in terms of demonstration projects (e.g., the Inuvik Energy Efficiency House and the Aurora Research Institute solar wall) is needed. Important information should include:

o How much money was saved and how?

o What improvements or measures were successful?

o What are the findings?

We also need to look at other circumpolar jurisdictions to learn and share technology successes.

• *Change mindset* – A shift in how NWT residents think about energy generation and use. A transition to accepting renewable energy is only possible by making a paradigm switch in how energy is thought of.

• *Continue to investigate technology for the North* – The NWT energy producers need to experiment and research to find new technologies that work to reduce energy costs and the environmental impact of energy generation. Companies could be encouraged to test their products in the cold environment of the NWT. For example, battery storage options are coming down in price and should be a consideration for home owners.

• *Consider environmental impacts of renewable energy technology* – Studies to determine impact (birds, noise, and aesthetics) of large scale wind farms on the environment need to be addressed. The Aurora Research Institute in Inuvik could be used for these studies.

• *Home heating* - More support needs to be provided for homeowners on how to switch to wood pellets. Although the GNWT has made significant inroads in providing heat from biomass to its buildings, this progress also needs to be made in non-territorial government buildings in hamlets and municipalities.

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

Session #2 opened with a brief 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:

* *Improve communication* – It was stressed again that better communication is needed to increase awareness and educate people on how to reduce energy use and take advantage of available programs. Key messages should include the linkage between energy use and climate change (to motivate actions), and explanations of key terms and tips on how to save energy. Related to this, it was noted that information in plain language delivered through the appropriate media is important to make sure the information reaches the intended audience and is understood. Radio messaging is underused to reach northern audiences.
* *Community involvement* – Communities want to be involved in all aspects of energy projects from design to construction. It was stressed that community involvement includes participating in preliminary discussions when energy projects are being contemplated.
* *Provide customized and flexible programs* – A “one size fits all” approach doesn’t work well. Participants felt that programming should be flexible to accommodate local needs and aimed at specific energy users (residents, businesses, local governments, etc.). For example, in Inuvik the delivery charges for Energy Star appliances are high. One suggestion is that the AEA could provide rebate programs for shipping costs of appliances to the Beaufort Delta as the region is becoming more isolated in terms of accessing goods due to barge restrictions and shortened winter road access.

• *Incentive programs* – The existing funding programs are helpful and should be continued but it was felt that these programs could be expanded to provide more support. For those who cannot afford to wait for the rebate after purchasing an energy efficient appliance, AEA could have a program that provided rebates up-front.

• *Retailers* – Most retail stores (e.g., the Northern) don’t display energy efficient products prominently, so people don’t know these products are available. If they highlighted these products, like appliances, maybe people would buy them more often.

* *Landlords and public housing* – Several ideas were put forth to better address energy use in rental and public housing. Specific ideas included education campaigns, house energy audits and incentive programs aimed at landlords and public housing authorities (as tenants have limited incentives to manage their energy use). AEA should target populations living in government housing.

• *Target building types and users* – In order to make the largest impact with limited resources, specific building types and users should be targeted for energy efficiency and conservation initiatives. For example, schools, arenas, pools and hospitals are the biggest energy users and improving their energy efficiency could see large reductions in energy use.

• *Community energy plan* - Communities are required to undertake a community energy plan in order to benefit from the gas tax program. Often the community’s energy plan is not followed through. The AEA could be used to develop baselines and “yard stick” energy assessments. A significant amount of resources are directed to community water and sewer, but more funding is needed to implement community energy plans.

• *Encourage energy competitions* - Communities could be encouraged to reduce energy usage by holding competitions with or between communities to see who can save the most money.

• *Reducing community energy usage -* Various ideas were put forth including converting streetlights to LED bulbs and installing solar panels on summer-use buildings (pools, visitor’s centre, etc.).

• *Waste awareness* - More awareness is needed on waste and consumer choices as it relates to landfills. Although there are limited recycling options, information on how to reduce waste is not available. Many landfills are at capacity and this message needs to be communicated. Retailers usually don’t prominently display products that are good for the environment.

• *AEA regional offices* - Outside of the regional offices, the Band or Hamlet office could be used as an additional outreach space. A resource person, like an AEA regional representative, should be employed in the communities as a resource to help people make improvements.

• *Federal government funding* - There is limited awareness of options for communities to access federal funding programs like Green Municipal Funds. There is also limited resources and capacity for proposal writing.

**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. In the long-term, this system will likely be replaced with a more sustainable NWT energy sector. The breakout groups focused on how the participants envision the NWT’s future energy sector.

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

* How should we foster and support the transition to a lower carbon economy and what kinds of initiatives will create this transformation?
* What is the role of government and partnerships in the transformation?
* Should the GNWT set greenhouse gas emissions or renewable energy targets as part of its vision?
* Should the NWT pursue larger scale hydroelectric development as well as community-based projects?

The key themes and results from this session included:

• *Regional energy resources* - Study the energy potential of regions to see what local energy resources are available that can help diversify our energy system. Large natural gas reserves exist in the Beaufort Delta and the GNWT should conduct feasibility studies to develop natural gas infrastructure.

• *Wind project support* – There is support for wind development in Inuvik as long as potential environmental impacts are assessed. Support was also discussed for a transmission line build-out for Kakisa / Fort Providence and developing geothermal resources. Participants were also supportive of applying the Colville Lake hybrid solar/diesel/battery model to other communities.

• *Carbon tax* - Participants clearly stated that a carbon tax should not be implemented as the cost of living in the Beaufort Delta region is already very high. The NWT is a small jurisdiction and a small contributor of GHG emissions compared to cities in the south. It was also noted that revenues from a carbon tax should be used to develop renewable and alternative energy projects.

• *Emissions targets* - The NWT should take the lead on setting emissions targets as it will demonstrate that the NWT is a leader in tackling climate change. This action could be used as leverage to get more funding from the federal government. It was also noted that this will be a disincentive to local business investment and that it will be difficult to attract local business with carbon pricing and emissions targets in place. How ENR’s air quality regulations fit into emissions targets was also raised.

• *Consultation and education* - It was noted that communities should be consulted about carbon pricing and taxation, and that education is needed to help people understand what carbon pricing, taxation and emissions targets mean.

• *Land claims* - Settling land claims in the NWT helps solidify the regulatory process and cross boundary issues. This provides certainty to larger projects (e.g., transmission lines and hydro projects) being investigated in the NWT.

• *Partnerships* - Public-private partnerships and other business models should be explored to see how they can help with the development of projects.

• *Downstream effects of hydro -* Some participants expressed concern about potential effects to water levels from Taltson and other hydro projects in British Colombia (BC) and Alberta.

* 1. **Day 2: Climate Change Knowledge, Resilience and Adaptation**

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

Session #4 opened with two brief presentations. The first presentation entitled “Climate Change Impacts and Knowledge” 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 second presentation entitled “Climate Change Monitoring and Assessments” 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 and community buy-in* – Many participants expressed concerns with a general lack of involvement by the communities in the identification, planning and completion of research and monitoring projects. Some of the specific concerns or suggestions for improvement included:
  + There needs to be better coordination between federal and territorial governments, government departments, agencies and non-governmental organizations to improve collaboration and coordination on climate change research and associated issues;
  + Researchers don’t always obtain permits. As a result, communities may not be aware of the project or have any opportunity to provide input;
  + More community input (from leadership, co-management boards, environmental monitors, youth, etc.) should be sought so the communities can identify their interests and concerns, and ensure the work addresses community needs;
  + Local monitors should be included in the project design and completion;
  + Researchers often do not return to the community to share results with the community; and,
  + Communities should also have an opportunity to review findings before they are published, allowing their input into the final product of the research.

* *Communications* – Researchers need to make sure that project results are shared with the communities. There were numerous suggestions on how results should be shared including the use of plain language and pictures, in-person presentations and discussion of findings, and how results can be used for decision-making. It was noted that land claim organizations and co-management boards or groups may also be very interested in project results (depending on the topic).
* *Awareness and education* - More education is needed to help communities become more aware about climate change. Holding similar workshops like what was held in Inuvik should be done in the communities.
* *Training and capacity-building* – More local people should be trained so they can become more involved in research projects. It was noted that some communities have environmental monitors but that sustained funding is required to be able to train and utilize more monitors.
* *Community-based monitoring* – The participants expressed a strong interest in the development of more community-based monitoring programs. It was felt that researchers should use local people to help conduct the research which can easily be done by working with local hunters, trappers and renewable resources boards and organizations.
* *Research and monitoring priorities or gaps* – Suggestions included:
  + Need more climate monitoring stations. Currently there are 30 in the NWT, but this isn’t enough considering the size of the territory;
  + Participants identified the following research and monitoring priorities:
    - Permafrost;
    - Water quality;
    - Erosion (coastal and river systems); and,
    - Biosphere (the environment of the area).
* *Risk and vulnerability assessments* – Several ideas were suggested for additional risk and vulnerability assessment work, including:
  + Potential loss of cultural artifacts due to coastal erosion;
  + Potential impacts on human health due to food insecurity and natural disasters;
  + Potential impacts on water quality from thawing permafrost;
  + Determining what to do about Tuktoyaktuk in the long-term. The current solutions to coastal erosion and sea-level rise might not be sustainable in the future;
  + Future viability of current ice roads; and,
  + Threats to native wildlife from invasive species.
* *Accessing and using traditional and local knowledge* – There were strong feelings that more needs to be done to ensure that traditional knowledge (TK) is given the value it deserves, that researchers are properly trained to access and use TK appropriately, and that research results derived from TK are reported back to the communities involved. It was also pointed out that to support research and monitoring projects (see above), baselines are needed to establish environmental trends and TK can be used to help construct those baselines.

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

Session #5 started with a brief 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:

* Ecosystems - what ecosystem components should be prioritized for vulnerability assessments?

* Infrastructure - what infrastructure do you think is most at risk due to climate change? Are new building standards an effective way to deal with this?
* Health and Safety – there are a number of climate-related health concerns including food security, air quality (smoke), new parasites, access to the land and hazards (floods, forest fires, etc.). Which of these are of most concern to your community and how should these be addressed?
* Culture and Heritage – what actions do you think are required to increase resiliency or address the impacts of climate change? Which projects should be prioritized in your community or region?
* Opportunities – what opportunities could climate change bring to this region?
* Barriers – what barriers are there to integrating adaptation planning into decision making and how could they be overcome? How should we pay for adaptation?
* In your community what are the priorities for resilience and adaptation projects? What timelines should these projects happen over?
* What are examples of successful collaborations in the community with other groups, agencies and businesses? What factors lead to this?

The key themes and results from this session included:

* *Beaufort Delta ecosystem* - The Beaufort Delta ecosystem is unique and is affected by environmental impacts from other countries (e.g., air quality – Chernobyl, other air borne pollution) and also from projects located in BC and Alberta (e.g., Peace-Athabasca hydro, such as the Bennett Dam).
* *Aboriginal culture and resilience* - Aboriginal and Inuit people have always been able to adapt to changes in their environment. Using skills learned from being on the land will help cope with the effects of climate change. Adapting to changes on the land due to climate change (e.g., changes in migration patterns) while still practicing subsistence harvesting will help maintain Indigenous culture.
* *Ecosystem components* – There was general agreement on the need to focus on the vulnerabilities that impact humans. Significant areas of concern included:
  + Water, rivers and watersheds – determining the impacts of warming temperatures and changing precipitation on watersheds, fish habitat, transportation and community water supplies;
  + Determining the impacts of climate change on the animals that humans depend on, such as caribou, muskox and fish;
  + Understanding how permafrost thaw slumps may impact:
    - Animals and their migratory patterns
    - Water quality and quantity
  + Determining the impacts of climate change on fish habitat and the availability of fish; and,
  + Whether pine beetles may be invading the NWT and impacting land users.
* *Infrastructure* – The participants identified several main areas of concern with respect to infrastructure:
  + Buildings and infrastructure should be designed to take into account northern conditions and not use southern engineering methods;
  + Ensuring that airports remain operational so essential services are maintained such as food delivery, medivac and general access to the outside world;
  + Ports and ferries may become less effective due to changes in water levels and flow rates. The best adaptation option is to replace ferries with bridges; and,
  + Older buildings are experiencing shifting foundations. Newer buildings are generally less vulnerable but adaptations may still be limited or very expensive.
* *Health and safety* – Several common themes were identified relating to health and safety, including:
  + Water quality and quantity. These concerns include the health implications noted above as well as people’s ability to use waterways for transportation and to access the land;
  + Permafrost thaw slumps and landslides along the Mackenzie River are a big concern, particularly if heavy metals or contaminants are being released;
  + Several food security issues were raised including possible contamination in country foods, quicker spoiling of meat and fish (due to warmer temperatures) and changes in the timing of when berries ripen; and,
  + Changing ice conditions are impacting transportation, on-the-land movement and species migrations.
* *Culture and heritage* – Several suggestions for addressing the impacts of climate change on culture and heritage included:
  + Providing increased resources for existing harvester support programs; and,
  + Increasing cultural education opportunities and on-the-land programs through the schools.
* *Opportunities* – The participants only identified a few potential opportunities stemming from climate change, including:
  + Energy savings due to warmer, longer summers; and,
  + Opportunities for more local agriculture and increased availability of some country foods (e.g., muskox moving to new areas).
* *Barriers* – Some of the barriers identified that may hinder the ability to adapt to climate change included:
  + More engagement and education is needed for community members to understand climate change resilience and adaption. Community-based projects to adapt to changing conditions will help in this regard;
  + Lack of funding and capacity. It was felt that communities should have funding so they can develop their own adaptation plans and decide what they want to protect; and,
  + Several northern challenges were identified included the “silo-ing” of resources, difficulties with the timelines specified in funding programs (such as one-year funding) and the criteria used for accessing funding.
* *Priorities* – The participants identified several priorities, including:
* *Food Security* - increasing our food security by growing more food and harvesting locally will help us adapt to climate change by reducing our dependence on goods from the south. Transportation is impacted by warmer weather and having more local food sources will protect communities from shorter winter road seasons and extreme weather events;
* *Education* - more awareness of climate change needs to be done by educating children and youth in the schools about the effects of climate change, how we can do our part to reduce our energy footprint and how we can adapt. Including this in school curriculums should be a priority; and,
* *Costs* - the costs of implementing adaptation measures needs to be better understood by all levels of government.

1. **CONCLUSIONS / NEXT STEPS**

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

* The need for better communication, better planning and community buy-in in regards to energy projects, and climate change adaptation and research projects;
* The need for partnerships that strengthen and contribute to communities, by providing resources, training opportunities for community members, or reducing the cost of living; and,
* The need for traditional and local knowledge to be used appropriately to strengthen projects and decisions in the NWT.

Appropriate partnerships and collaborations were considered important to support both energy projects and resilience and adaptation efforts. Workshop participants clearly expressed interest in being more involved in the planning, decision-making and implementation of projects and initiatives.

All of these concerns suggest an overall need for improved collaboration between different levels of government (federal, territorial, Aboriginal, local), 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**

#### NWT CLIMATE CHANGE STRATEGIC FRAMEWORK & NWT ENERGY STRATEGY

INUVIK INVITATIONAL WORKSHOP

Ingamo Hall, November 1 & 2, 2016

**Day 1 – NOVEMBER 1**

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 – 11:00** Presentations:Introduction to Energy in the NWT

Renewable and Alternative Energy

**11:00 – Noon** Group Work #1: Supporting Renewable and Alternative Energy Development

Participants will discuss and identify renewable and alternative energy solutions.

**Noon – 1:00 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

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INUVIK INVITATIONAL WORKSHOP

Ingamo Hall, November 1 & 2, 2016

**Day 2 – NOVEMBER 2**

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** Presentation:Climate Change Impacts and Knowledge

Climate Change Monitoring and Risk/Vulnerability Assessments

**9:40 – 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 – 2:30** 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.

**2:30 – 2:45 Break**

**2:45 – 4:00** Group Work #5 (continued)

**4:00 – 4:30** Energy and Climate Change Wrap-up

**APPENDIX B: LIST OF PARTICIPANTS**

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| **Name** | **Organization** |
| Barbara Archie | Aklavik Community Corporation |
| Colin Gordon | Aklavik Community Corporation |
| John Carr | Arctic Energy Alliance |
| Annika Trimble | Aurora Research Institute |
| Jolie Gareis | Aurora Research Institute |
| Peter Clarkson | Department of the Executive |
| Chloe Dragon-Smith | Ecology North |
| Andrew Charlie | Ehdiitat Gwich'in Counc;il |
| Ben Linaker | Environment and Natural Resources |
| Brian Sieben | Environment and Natural Resources |
| Rob Marshall | Environment and Natural Resources |
| Leanne Tait | Facilitator |
| Grant Sullivan | Gwich'in International |
| AlecSandra Macdonald | Gwich'in Land and Water Board |
| Holly Hesk Jones | Gwich'in Land and Water Board |
| Janet Boxwell | Gwich'in Renewable Resource Board |
| Bobby Jo Greenland-Morgan | Gwich'in Tribal Council |
| Fred Behrens | Hamlet of Aklavik |
| Jason Reidford | Hamlet of Paulatuk |
| Darrel Nasogaluak | Hamlet of Tuktoyaktuk |
| Chukita Gruben | Hamlet of Tuktoyaktuk |
| Peter Workman | Health and Social Services |
| RJ Carr | Health Canada |
| Felix Mercure | Indigenous and Northern Affairs Canada |
| Jennifer Ardiel | Indigenous and Northern Affairs Canada |
| Marijo Cyr | Indigenous and Northern Affairs Canada |
| Yves Theriault | Indigenous and Northern Affairs Canada |
| Robert Whitford | Industry, Tourism and Investment - Inuvik |
| Johnny Lennie | Industry, Tourism and Investment - Inuvik |
| Chuck Gruben | Inuvialuit Game Council |
| Lawrence Ruben | Inuvialuit Game Council |
| Jenn Parott | Inuvialuit Regional Corporation |
| Jiri Raska | Inuvialuit Regional Corporation |
| Kate Darling | Inuvialuit Regional Corporation |
| Gerald Inglangasuk | Inuvik Community Corporation |
| Crystal Lennie | Municipal and Community Affairs |
| Mike Ocko | NT Power Corporation |
| Myra Berrub | NT Power Corporation |
| Pam Coulter | NT Power Corporation |
| Eileen Marlowe | Public Works and Services |
| Geraldine Byrne | Public Works and Services |
| Peter Lennie-Misgeld | Public Works and Services |
| Remi Gervais | Public Works and Services |
| Todd Engram | Public Works and Services |
| David Krutko | Tetlit Gwich'in Council |
| Georgina Neyando | Tetlit Gwich'in Council |
| Johnny Kay | Tetlit Gwich'in Council |
| Richard Wilson | Tetlit Gwich'in Council |
| Jim McDonald | Town of Inuvik |
| Philip Blake | Tsiigehtchic Charter Community |
| Gilbert Olifie | Ulukhaktok Community Corporation |