NWT

Energy Strategy

Resources, Wildlife and Economic Development

Energy is a critical part of our daily lives. We use energy in our homes, businesses and communities.

A large part of the Northwest Territories' (NWT) annual energy supply comes from fossil fuels imported from southern Canada. The NWT has significant renewable and non-renewable energy resources including hydroelectricity, oil, natural gas and a variety of alternative energy sources.

We can reduce energy costs in our communities and generate new economic growth by developing our energy resources for the benefit of all NWT residents.

The NWT Energy Strategy contains a framework to guide the sustainable development of our energy sector and to improve the affordability of energy services in communities while protecting our environment.

By working together with all levels of government, business, industry and residents we can meet the challenge of providing affordable, and sustainable, energy for all NWT consumers.

Jim Antoine
Minister Resources, Wildlife and
Economic Development

message from the minister

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OVERVIEW

Energy is essential to the people of the Northwest Territories. We use energy every day to heat our homes and buildings, to operate lights and other equipment and to transport products and people in and out of our communities.

The Government of the Northwest Territories (GNWT) developed *the NWT Energy Strategy* to provide a strategic framework to guide decisions and activities in our energy sector. Energy policy, economic activity and the state of the environment are inextricably linked. The intent of this document is to ensure better integration of public policy objectives related to territorial energy requirements, development of our energy resources for export and continued protection of our environment.

At the outset, it was recognized that the GNWT is only one of many interested parties involved in the energy sector. The Government of Canada, Aboriginal and community governments, energy service providers and residential, commercial and industrial energy users all have a keen interest in different aspects of how energy is supplied, used, priced and/or regulated in the NWT and their thoughts, opinions and recommendations have been taken into consideration throughout the production of this Strategy.

The NWT Energy Strategy is based on the following three key directions:

#1: Make energy services sustainable and affordable

There are two reasons that the cost of energy for Northerners is significantly higher than that of other Canadians. The first is that we rely on importing huge quantities of expensive fuel from southern Canada. Our second barrier to affordable energy costs is that our small communities are dispersed across 1,171,918 square kilometers. Therefore, on the whole, we cannot take advantage of the economies of scale available to those people who live in more densely populated areas. Energy efficiency and local renewable energy sources can help reduce our use of imported fuels, thus making energy services more sustainable and affordable.

#2: Develop NWT energy resources

The NWT is blessed with an abundance of energy resources, both renewable, (solar, wind, biomass, water, and geothermal) and non-renewable (oil and natural gas).

Non-renewable energy forms will likely play a large role in our economic development as a region. Very significant reserves of oil and natural gas have already been found and the likelihood of finding additional resources is very good.

The development and export of these energy resources, in addition to our renewable hydroelectric potential, present a significant opportunity for economic growth in the NWT. It is critical that these resources be properly managed to maximize the benefits for all NWT residents.

#3: Ensure protection of the environment

Energy use and development affect our land, waterways and the quality of our air. To preserve our environment for current and future generations, development of our energy sector must be environmentally sustainable. This involves choices and requires careful planning to minimize environmental impacts. Expanding the use of renewable energy in the Northwest Territories is an important element in developing a more sustainable economy.

These key directions, and some associated targets, are the foundation of the Strategy and are intended to guide current and future decisions on all energy-related issues.

The NWT Energy Strategy contains fourteen (14) actions for achieving the stated directions and targets. Some of these actions can be implemented immediately. Other actions will require the support and/or financial participation of other partners, such as the Government of Canada, Aboriginal and community governments and the private sector.

Implementation details related to the recommended actions, such as prioritization, funding, timelines and key partners are being developed in a companion document, titled *NWT Energy Strategy Implementation Plan,* to be released at a later date.

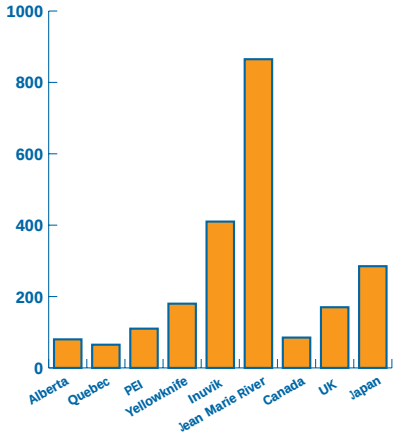
INTRODUCTION

In June 2001, the Premier of the Northwest Territories and Cabinet established the NWT Energy Secretariat. This specialized unit was charged with the specific task of developing an energy strategy for the Territory.

This Strategy is a response to, and lays a foundation for managing several northern issues, including:

- The high cost of energy in our communities and its negative impact on economic development and our standard of living.
- The development of a Mackenzie Valley natural gas pipeline that would allow the NWT to export its significant reserves of natural gas and, possibly, oil.
- The development and/or expansion of the Territory's vast hydro-electric potential for domestic use and the possible exportation of the excess energy produced.
- The maintenance of the balance between the development of our energy resources and the protection and the preservation of the people, the lands, the water and the wildlife of the NWT.

Comparison of Residential Electricity Costs ($Cnd/month)



Notes:
1. Based on 1000 kWh per month
2. Source: National Energy Board's "Canadian Electricity Trends and Issues" (May 2001) and NWT Power Corporation's "2001/03 General Rate Application – Phase II (November 2002)

As part of the process for developing the Energy Strategy, the Energy Secretariat conducted exhaustive consultations with communities and energy stakeholders. The comments and viewpoints provided were used to build a reasonable consensus on the content and structure of the Energy Strategy.

Consultation activities included presentations on energy issues, energy pilot project partnerships, energy-related workshops and territorial-wide public consultations on the widely distributed discussion paper *Towards an Energy Strategy for the NWT*. The resulting stakeholder and public input have been integral to the shaping of the Vision, Key Directions and Actions contained in the Energy Strategy.

The GNWT recognizes that implementation of strategic energy directions and specific actions will require strong partnerships between individuals, Aboriginal interests, businesses and industry and all levels of public government. Commitments and cooperation from all stakeholders and energy consumers will be required if the objectives and targets contained in this Strategy are to be achieved.

Challenges and Opportunities

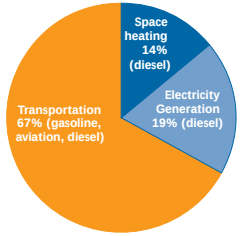
Energy Security

Energy powers our daily lives and our economy. Where our energy supplies come from, how we use energy and how we price energy services are all aspects of energy security.

The NWT is very dependent on imported fossil fuels. Over the last three years, we have imported an average of about 400 million litres of fuel per year. This represents over 90% of our total annual energy supply. Our other major supply of energy is hydro-electricity. Wood, propane and natural gas are also used in many NWT communities for space heating. The NWT has considerable renewable energy resources such as hydroelectric, wind, solar and wood as well as non-renewable resources such as oil and natural gas. The development of local renewable and non-renewable energy sources is imperative to reduce our reliance on costly, imported fuels.

In terms of energy use, about two-thirds of our energy consumption occurs for transportation activities, such as air, marine, rail and road transport. Other significant uses include electricity generation and space heating of buildings and homes. In the future, our energy needs are expected to increase due to population growth and higher economic activity. Improving the energy performance of our homes, buildings and other infrastructure can reduce the amount of energy that needs to be supplied and also provides other economic and environmental benefits.

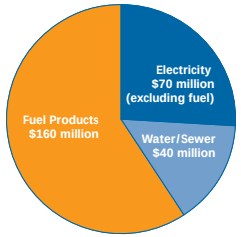
NWT Fuel Consumption by Sector



Notes:
1. Source: GNWT Department of Finance

Reliable energy services such as electricity and heating fuel are essential. Unfortunately, the costs of these services in many communities in the NWT are extremely high. In total, about $230 million is spent each year for fuel and electricity. To ease the burden of high energy costs on residential consumers, the GNWT spends millions each year in energy subsidy programs. While subsidies help make energy affordable, this does not address the underlying causes. The NWT requires access to affordable energy sources to meet our daily energy needs and grow our economy.

NWT Annual Energy and Utility Expenditures by Service



Notes:
1. Source: Arctic Energy Alliance
2. Fuel expenditures estimated assuming 400 million litres per year, an average fuel price of $0.325 per litre and $30 million in transportation charges.

Economic Development

The NWT possesses significant oil and natural gas resources and a large hydroelectric potential.

Resource assessments show that the NWT has a total oil potential of 5.6 billion barrels and a total natural gas potential of 70 trillion cubic feet (TCF). To date, estimated reserves of 1.5 billion barrels of oil and 9 TCF of gas have been discovered.

Due to recent events in the North American market, there is renewed interest in developing our oil and natural gas reserves. Interest in building a Mackenzie Valley natural gas pipeline has increased to the point that there is a strong likelihood that development and pipeline regulatory applications will be filed in the near future.

The NWT also has an abundant supply of oil resources. Currently, the Norman Wells field in the Sahtu settlement region produces approximately 25,000 barrels per day with production expected to continue, on a declining basis, until 2020.

The large hydroelectric potential of the NWT is well acknowledged. Studies have long concluded that new hydro-electric generation facilities could be developed on several of the NWT's large rivers to meet anticipated increasing territorial and North American demand for electricity.

Developing our energy resources for export to southern markets represents an opportunity and a challenge. Due to the sheer size of these resources, this type of large-scale development has the potential to transform the NWT economy. The challenges include a current lack of jurisdiction and control, the high level of investment required to finance large-scale energy developments and the need to manage and minimize negative impacts on our communities and the environment. If the net benefits to NWT residents cannot be maximized, the resources should remain undeveloped, or be developed only for northern use, until conditions improve.

Protection of our Natural Environment

Aboriginal and non-Aboriginal people in the NWT have always had strong ties to the land and waterways. It is the responsibility of today's leaders and citizens to manage and protect our natural environment so that it may continue to support future generations.

Global climate change is considered one of the most serious environmental, economic and political challenges in the world today. Forecasts show that the continued warming of the Earth's temperatures, resulting from the global burning of fossil fuels, could trigger a wide range of changes in the Earth's climate.

In the NWT, the impact of global climate change on our environment and on our traditional and non-traditional pursuits is a vital concern. A warming climate will impact the way social and economic development takes place.

Ensuring protection of the environment is a responsibility shared by many partners including the federal and territorial governments as well as regional regulatory boards established through land claim agreements. While there is an existing framework for most environmental issues, it is imperative that any potential environmental impacts resulting from future energy resource development projects be properly identified and managed before any damage occurs. A considerable amount of work is also being done to find ways to deal with climate change.

Fiscal and Jurisdictional Realities

Some of the biggest challenges in implementing *the NWT Energy Strategy* involve funding and jurisdiction. The Government of the NWT does not have the fiscal flexibility or control necessary to make all the required investments to secure the future of our energy sector. In particular, strategic investments in energy supply options and the development and management of our non-renewable energy resources will require the cooperation and participation of the business sector and the Government of Canada.

FRAMEWORK

The following Vision, Key Directions and Targets provide the general framework for *the NWT Energy Strategy*:

Vision

The vision for the future of the NWT energy sector reflects both the need to balance economic and environmental considerations and the feedback received during public consultations. It states:

> *"To develop an efficient and effective energy sector that provides affordable and sustainable energy to northern consumers and contributes to the development of a sustainable northern economy. In doing so the energy sector demonstrates a strong commitment to protecting northern ecosystems and meeting the NWT's national and international environmental obligations."*

Key Directions And Targets

To realize our vision and secure our energy future, there are three key directions the NWT must follow. These directions form the foundation of *the NWT Energy Strategy* and will be used to guide current and future decisions on all energy-related issues. Where applicable, specific targets have been developed to serve as benchmarks to measure our progress.

#1: Make Energy Services Sustainable and Affordable

The current ways in which energy is supplied to our communities and industry, and how this energy is priced and consumed, are not financially or environmentally sustainable.

To make energy services more affordable and sustainable, the following targets have been adopted:

- The NWT will improve the energy efficiency of residential, commercial and government-funded buildings and facilities. Medium and long-term targets are to stabilize per capita energy use in our communities (excluding industrial energy use) at 2002 levels by 2010 and prevent further increases in future years.
- The NWT will increase the use of renewable energy sources. Medium and long-term targets are to provide 10% of the energy supplied to our communities (excluding industrial energy supply) from renewable energy sources by 2010 and 25% by 2025.
- The NWT will lessen reliance on fuel products imported for use in our communities. Medium and long-term targets are to stabilize at 2002 levels by 2010 and achieve a 25% reduction from 2002 levels by 2025.

#2: Develop NWT Energy Resources

The Government of the Northwest Territories, the Aboriginal Summit and the Government of Canada are negotiating the transfer of provincial-type powers and responsibilities for Crown lands and resources in the NWT to northern governments. This process is referred to as devolution.

The NWT enjoys enormous energy resources such as oil, natural gas and hydroelectric potential. The estimated value of existing and potential projects exceeds $100 billion dollars. Currently, the pace, magnitude and nature of non-renewable resource development are managed by the Government of Canada.

To ensure NWT residents receive maximum benefit from the development and export of our energy resources, the GNWT is committed to:

- Pursuing the development of our oil and natural gas resources in an economically and environmentally sustainable manner.
- Identifying and promoting investments in legacy infrastructure, such as roads, electricity facilities and community and social infrastructure, that can be supported by resource development.
- Working in partnership with Aboriginal governments to examine the impacts and benefits of developing NWT hydroelectric resources.

#3: Ensure Protection of our Natural Environment

The ongoing provision of energy services to our communities and industry and the development of our energy resources cannot occur at the expense of our natural environment. People and animals depend on our land and water for survival.

To preserve the health of our environment and communities, the GNWT is committed to:

- Continuing to work with existing federal, territorial, Aboriginal and regional regulatory agencies to protect all aspects of the environment.
- Continuing and expanding efforts to predict potential impacts related to future climate change and develop adaptation strategies.
- Continuing to take action on greenhouse gas emissions in support of Canada's international commitments on climate change.
- Ensuring that GNWT energy, environmental and health objectives, policies and programs are consistent and integrated.

Principles

When considering specific actions, such as new policies and programs, it is helpful to have a set of principles to guide decision-making. Actions included in the Energy Strategy have been developed based on the following principles:

Individual Responsibility for Energy Use

Energy consumers are responsible for their energy consumption and share responsibility for the cost of their energy bills.

Leadership

The GNWT will demonstrate leadership by diligently and responsibly taking actions to reduce its consumption of energy and utility services.

Partnerships

Decisions on energy supply, use and development should be made in partnership with territorial, Aboriginal, community and federal governments, businesses, industries and consumers.

Balanced Approach

The GNWT recognizes that there may be financial costs in achieving specific energy objectives, but these costs may be balanced by resulting environmental and social benefits.

Phased Approach

The NWT Energy Strategy should identify least net cost (economic, environmental and social costs and benefits) measures first and take a long-term, responsible approach to achieving a sustainable and affordable energy sector.

ACTIONS

The NWT Energy Strategy contains fourteen (14) specific actions for achieving the key directions and targets outlined earlier. Some of these actions, particularly in the areas of energy efficiency and energy supply options, received widespread support during the public consultations and can be implemented immediately or over the next several years. Actions related to the development of our non-renewable energy resources and the protection of the natural environment, involve working in partnership with other levels of government and the private sector. These will unfold over time.

Each action is presented below. All details related to the implementation of these actions will be contained in, *NWT Energy Strategy Implementation Plan* a separate document from the Strategy, due for release at a later date.

Energy Efficiency

The first step in meeting our energy needs is to ensure we are not wasting or consuming energy in non-productive ways. Using energy efficiently is important, regardless of the energy source available. Energy efficiency lowers our energy costs, reduces negative impacts on the environment and provides more local employment and economic development opportunities.

The medium and long term targets established for energy use in the NWT are to stabilize per capita energy use (excluding industrial energy use) at 2002 levels by 2010 and prevent further increases in future years.

The following actions will be implemented, as funding permits, to improve energy efficiency in residential homes and commercial and government-funded facilities:

Action #1 – Provide energy management programs to commercial and residential energy users to assist them in managing their energy use.

Action #2 – Implement energy management programs in government departments to improve energy efficiency in existing government facilities and in new government-funded construction.

Action #3 – Implement energy efficiency initiatives to reduce fuel use in the transportation sector.

Energy efficiency projects usually involve good design decisions, installation of energy efficient equipment and machinery and changes in operational procedures. A typical energy efficiency initiative can yield energy savings of 10% to 20% and reduce environmental impacts.

Co-generation refers to the production of electricity and heat using one fuel source. By producing both electricity and heat in a single process, fuel efficiencies of up to 90% can be achieved. Examples of available co-generation technologies include gas turbines, combined-cycle turbines and diesel engines. Emerging co-generation technologies include micro-turbines, fuel cells and Stirling engines.

Energy Supply Options

Making better use of locally available resources to meet the energy needs of NWT communities and industries is necessary to achieve a reduction in our dependence on fossil fuels imported from the south.

The medium and long-term targets are to stabilize fuel imports (excluding industrial energy use) at 2002 levels by 2010, and achieve a 25% reduction from 2002 levels by 2025. To achieve this, close to 25% of our energy supply must be provided from renewable energy sources by 2025. Meeting these targets will require: increasing the use of renewable energy sources such as hydro, wind, solar and wood; taking advantage of emerging co-generation technologies; and developing known natural gas reserves when they are located in close proximity to our communities when economically feasible.

As funding permits, the following actions will be implemented to increase our use of locally available energy resources:

Action #4 – Develop policies and programs to accelerate the use of renewable energy and co-generation technologies.

Action #5 – Undertake actions to evaluate and develop economically viable hydro projects to serve individual communities while working with Aboriginal partners and industry on a longer-term development plan to meet the expected future electric load of the NWT.

Electric Industry

Another crucial element in energy sustainability is the need to make energy services affordable for NWT energy consumers. In particular, there is a pressing need to lower the cost of electricity service in our communities.

At present, there is a mix of public and private sector players in the electric utility industry. The generation and delivery of electricity is provided on a monopoly basis; each utility company has franchises granting it the right to provide electricity in its service areas.

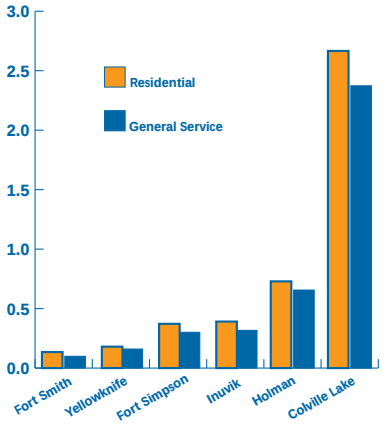
The Public Utilities Board (PUB) is an independent agency of the GNWT. One of the PUB's main responsibilities is regulating the rates charged to customers by the electric and natural gas utility companies in the NWT. In order to change their rates, utility companies must first file a General Rate Application with the PUB. After evaluating the application and holding public hearings to obtain the comments of customers and other interested parties, the PUB will use the information collected to issue a written decision either approving or rejecting the application.

In accordance with the *Public Utilities Act*, no public utility may collect, charge or enforce rates other than the rates approved by the Public Utilities Board.

The NWT Power Corporation (NTPC), a GNWT Crown Corporation, is the main generator of electricity in the NWT. It also distributes electricity in 26 communities. Northland Utilities (NUL), an investor-owned utility, buys electricity from NTPC at wholesale rates and distributes it in Hay River and Yellowknife. NUL also generates and distributes power in several smaller communities. Other electricity generating companies include Imperial Oil in Norman Wells and the Dogrib Power Corporation both of whom sell wholesale power to NTPC. The diamond mines also generate their own power on-site.

From a supply perspective, the electricity provided to our communities by NTPC can be considered sustainable as about 85% of the annual utility generation of electricity comes from NWT hydro and natural gas resources.

Comparison of Electricity Rates in NWT Communities ($/kilowatt-hours)



Notes:
1. Source: Tables 7.5 and 7.6 (revised), NWT Power Corporation 2001/03 General Rate Application – Phase II (November 2002) and personal correspondence with Northland Utilities (YK).
2. Rates proposed by NTPC pending PUB decision.

Despite the achievements made by NTPC over the last fifteen years in reducing its reliance on imported fossil fuels, there are several factors that indicate that the current approach to providing electricity in the NWT is becoming less viable over time and will eventually undergo significant changes. Such factors include:

- Division of the NWT Power Corporation between the NWT and Nunavut. The NTPC is presently a much smaller utility company and has lost some economies of scale in its operations.
- The rising cost of providing electric service in many of our communities; particularly obvious in the smaller communities that rely on diesel-fired generating plants.
- The availability of new technologies and potential new energy sources (such as natural gas) that may enable a customer to generate some or all of their own electricity. A diminishing customer base could result in higher electricity prices for remaining customers on the utility grid.

- The anticipated electric industry trend towards installing smaller generation systems next to the electric load they serve (i.e. small-scale on-site generation) rather than a central power plant and transmission and distribution lines.

- Strong support in smaller diesel-electric communities for a single electricity rate for all consumers in the NWT. This would represent a significant departure from the current community-based rate structures where each community pays rates based on the costs to provide electricity in that community.

- The need to re-evaluate the current approach to utility regulation. Arguments have been made that the current system is too costly and burdensome for a territory of only 42,000 people.

Several studies, including the *Robertson Report (2000)*, two GNWT utility pricing and subsidy reports (2000 and 2002) and a review of the Public Utilities Board (2001) have been conducted in recent years on different aspects of these issues. During its public consultations, the NWT Energy Secretariat received numerous comments on the cost of electricity. Many people felt that how the electric utility industry is organized requires improvement in order to lower costs and allow for the use of new technologies and new industry participants. Others, particularly in the smaller, diesel-electric communities, felt that a single rate for electricity would be the fairest way to ensure affordable electric service for all NWT residents.

Despite the work done to date, a consensus has not emerged on how to address the problems at hand. What is now clearly understood is that issues related to electricity supply, ownership, pricing and regulation are complex and inter-related. Solutions for these problems need to be developed in a holistic, not isolated, manner, and will require a careful balancing of competing interests.

In this context, it is premature for the GNWT to make a decision on the issue of a single rate for electricity without first considering whether there are more cost-effective ways of providing electricity service to our communities than the current system. This is particularly evident given that a single rate for electricity would, in the context of the present Territorial Power Support Program, only benefit commercial customers and high-consumption residential customers while doing nothing to reduce the underlying cost of providing electricity.

As a matter of public policy, it will also be important for the GNWT to address the question of the appropriateness of, as well as possible alternatives to, the Public Utilities Board continuing to retain exclusive jurisdiction for approving utility rate structures.

The NWT is not alone in considering how to best provide reliable, affordable and environmentally sustainable electricity to its citizens. In recent years, most other jurisdictions in North America have undertaken extensive reviews of the

manner in which their electricity industries are structured, operated and regulated. Of these, several Canadian provinces (Alberta, Ontario, Manitoba, New Brunswick) and some 20 U.S. states (as well as numerous countries world-wide) have re-structured their electric industries to separate generation, transmission and distribution functions and permit some form of market competition, particularly in the generation of electricity.

To determine the most appropriate solutions for the provision of electricity in the NWT in the long-term, the following action will be undertaken:

Action #6 – Evaluate the appropriateness of, as well as possible alternatives to, the Public Utilities Board continuing to retain exclusive jurisdiction for approving utility rate structures.

Energy Exports

The NWT is at an interesting crossroads. Non-renewable resource developments, such as oil and natural gas production and a Mackenzie Valley natural gas pipeline, could mean the difference between our on-going dependence on federal transfer payments and becoming Canada's first "have" territory.

Of equal concern to many people is the potential impact that large-scale development may have on our environment and the social and cultural fabric of our communities.

In considering how the NWT might maximize the economic benefits of energy resource developments and minimize social and environmental impacts, it is important to remember that the pace, magnitude and nature of non-renewable resource development are currently managed by the Government of Canada. The NWT does not yet fully control its own destiny in these matters.

Due to the role and jurisdiction of other partners such as the Government of Canada, Aboriginal and community governments and the private sector, as well as the GNWT's limited fiscal flexibility, the GNWT recognizes it must work with its partners to achieve the objectives contained in this Strategy.

The potential development of our non-renewable and large-scale hydroelectric resources represents opportunities for new economic developments and may also provide new energy supply options for some of our communities.

Oil and Natural Gas Development

In October 2000, the GNWT released the *Non-Renewable Resource Development Strategy for the NWT* (NRRDS). It outlines specific actions designed to position the NWT and Canada to benefit from NWT energy resource potential, and promotes economic self-sufficiency for the NWT while contributing to the wealth of Canada.

The estimated value of all existing, new and possible future oil and gas projects is more than $100 billion dollars.

The NRRDS identified the many challenges that the NWT is faced with in trying to reap maximum benefits from these developments and outlined three key areas requiring attention and investment. The largest challenge was the funding of the required investments – approximately $340 million over four years was identified in the NRRDS. As the federal government stands to substantially benefit from the development of northern resources, the GNWT anticipated that the federal government would share approximately two-thirds of the cost of these required investments. However, to date, the federal investment has been far less than what was anticipated and the GNWT has been responsible for the majority of the investments made.

From the GNWT's perspective, three fundamental conditions must be met to ensure NWT support for the development of our oil and natural gas resources:

- Northern residents must benefit;
- Development must be environmentally and economically sustainable; and
- Market forces must determine the location and timing of gas field and pipeline development.

The GNWT will continue to work to maximize the benefits from resource development through the following actions:

Action #7 – Make strategic investments in infrastructure, training and business development related to the Mackenzie Valley natural gas reserves and pipeline project while engaging the Government of Canada to provide its share of financial support for these preparations.

Action #8 – Use a policy of sustainable development to represent the interests of the people of the NWT in the regulatory process. The GNWT will work to ensure these developments provide significant wealth to the people and governments of the NWT *and* are environmentally sustainable through the use of best practices.

Actions related to the possible devolution of ownership of Crown lands and resources to the peoples of the NWT are explained in the Policy and Planning section below.

Medium and Large-Scale Hydroelectric Development

The NWT hydroelectric generation potential has been known for years, and is documented in reports dating back to 1972.

During the summer of 2001, a hydro presentation was made in most NWT communities. It provided an overview of the hydro potential available in the NWT and how that potential might be developed in an environmentally responsible manner. Key aspects of this presentation included the provision of revenues to the GNWT and Aboriginal governments, as well as the potential to reduce energy costs to NWT consumers. After this initial round of consultation, the GNWT committed that any additional research with regard to the impacts and benefits of NWT hydro development must be done in partnership with Aboriginal governments.

The GNWT believes that some NWT hydro resources can be developed in a manner that minimizes the environmental impact. However, to date, relatively little work has been done to confirm this. The GNWT will not support massive reservoirs or significant environmental damage that have been associated with large-scale hydro development historically.

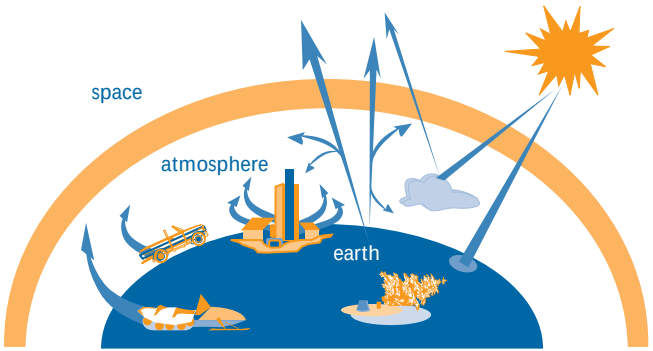
Even if the potential impact of large-scale hydro development can be mitigated to the satisfaction of the government and the people of the NWT, the question of securing a market for this energy remains. While some very preliminary studies have indicated development of this potential has some promise in the future, the evolving energy sector and market in the south will have to be carefully monitored.

The GNWT commits to the following action on large-scale hydro-electric developments:

Action #9 – Continue to work in partnership with interested Aboriginal governments to examine and discuss the impacts and benefits of possible NWT hydroelectric projects while supporting the development and construction of hydro projects that have the approval and support of Aboriginal governments.

Protection of the Natural Environment

Our long-term environmental challenges involve dealing with issues related to global climate change and the need to protect our bio-physical environment (i.e. the land, waterways, air quality and wildlife) while managing the development of our energy resources for local or export purposes.



Human activities, mostly the burning of fossil fuels, are releasing increased amounts of carbon dioxide and other gases into the atmosphere. The accumulation of these gases in the atmosphere is believed by most scientists to be causing increased global warming and climate change.

Climate Change

In terms of climate change, the NWT has two significant challenges. The more immediate problem is the need to reduce our emissions of the greenhouse gases believed to be causing the problem of global climate change. As these emissions result from the burning of fossil fuels, the specific actions to improve energy efficiency and energy supply options noted earlier also represent the GNWT's response to reducing greenhouse gas emissions. In this regard, many elements of the draft *NWT Greenhouse Gas Emission Strategy* have been incorporated into *the NWT Energy Strategy*.

The second challenge is to identify and adapt to the changes that will occur in the northern climate in years to come if global average temperatures continue to rise as predicted.

Such rapid increases in average temperatures will have serious implications on our daily lives and the northern environment.

In the North, the impacts of climate change are already being seen. Examples include:

- Shrinking of the sea ice and the polar ice cap, which is beginning to impact the polar bear and traditional harvesting activities;

Scientists predict that by the end of the 21st century, temperatures in the NWT will be at least 5°C warmer than they are today.

- Melting of permafrost is affecting building foundations, ice roads, all-year roads and may impact on community water supplies; and,

- Changes in ecology. The movement of birds, animals and insects further north into the NWT is being documented. Changes in vegetation and forests and snow conditions, in addition to an increase in insects will affect animals such as the caribou and negatively impact on traditional harvesting activities.

Knowledge and awareness are the keys to ensuring NWT residents are equipped to deal with climate change issues and understand the impact of their actions on the NWT's natural environment. Through the draft *NWT Greenhouse Gas Emission Strategy*, the GNWT has already started to develop an increased capacity to identify and adapt to climate-related impacts at the community level. The GNWT will continue to:

Action #10 – Undertake initiatives to build knowledge of traditional and scientific aspects of climate change. This may include northern impacts and adaptation issues and supporting efforts to develop long-term adaptation strategies.

Protection of our Natural Environment

Federal, territorial and aboriginal governments are all involved in protecting the environment. The Government of Canada currently has legislative and policy authority over most of the NWT's natural resources. The GNWT is involved primarily in environmental protection issues involving Commissioner's lands. Regional co-management boards established through land claims and self-government agreements are increasingly becoming responsible for environmental assessment, land use planning and land and water licensing issues. Specific responsibilities and processes will continue to evolve and mature over time.

The following nine boards and agencies are active contributors to the protection of the NWT environment. Mackenzie Valley Environmental Impact Review Board, Mackenzie Valley Land and Water Board, Gwich'in Land and Water Board, Gwich'in Land Use Planning Board, Sahtu Land and Water Use Board, Sahtu Land Use Planning Board, Inuvialuit Land Administration, Inuvialuit Environmental Impact Review Board, NWT Water Board.

Actions that will gradually be implemented to enhance our ability to ensure protection of the natural environment include:

Action #11 – Integration of greenhouse gas emission and other environmental considerations in the design, environmental assessment, implementation and regulation of all new resource development projects.

Action #12 – Development and implementation of consistent standards and codes of practice to ensure resource developments are environmentally sustainable through the use of best practices.

Policy and Planning

Successful adoption and implementation of the numerous actions contained in *the NWT Energy Strategy* will require significant planning, policy and organizational changes, particularly within the GNWT.

Most of the details related to the immediate and longer-term implementation of *the NWT Energy Strategy* are contained in a separate *NWT Energy Strategy Implementation Plan*. Two key implementation actions integral to the success of this Strategy are outlined below:

GNWT Energy Policies and Planning

Currently, responsibility for various energy-related policies, programs and initiatives is spread across several different GNWT departments, Crown Corporations and agencies. To implement the actions contained in *the NWT Energy Strategy*, the GNWT will need to organize and undertake a considerable amount of work in the areas of studies, policy reviews, development of new policies and programs and the measurement of progress. To be able to do this, the GNWT will undertake the following action:

Action #13 – Create an energy policy group within the GNWT to take lead responsibility for the implementation of the actions contained in *the NWT Energy Strategy* and for tracking, measuring and reporting on progress achieved. This action will be considered in conjunction with the review of options for Government of the Northwest Territories departmental and headquarters corporate structures.

Devolution

Another crucial factor with implications for energy and resource policy and planning is the eventual devolution of provincial-type responsibilities for Crown lands and resources as well as their management from the federal government. Until the NWT can manage its resources and assume powers and responsibilities related to the development of those resources, it lacks the tools to effectively implement an energy strategy or policies in a comprehensive manner.

A very important element in the devolution discussions is the net fiscal benefit to the NWT associated with resource revenues including royalties. The GNWT and Aboriginal governments expect that a fair and reasonable portion of the benefits from resource development will accrue to northern governments and peoples. Northern governments need these revenues to operate their governments, create economic incentives to foster sustained development and for managing the impacts of development. In particular, revenues will be needed for infrastructure development, which will be supportive of energy developments.

The GNWT will continue to take action on devolution by:

Action #14 – Concluding a devolution agreement, that ensures the necessary provincial-type powers, authorities and revenues are transferred, so that effective energy strategies and policies can be implemented. Conclusion of a devolution agreement should occur before the construction of a Mackenzie Valley pipeline and prior to the expected increase in resource development activity that a pipeline is expected to generate.

IMPLEMENTATION

The NWT Energy Strategy is an important first step in managing our energy sector in a sustainable way to the maximum benefit of all NWT residents. As with any strategy, proper execution of these ideas requires good organizational structures, sufficient financial and professional resources and a realistic implementation plan.

As described, the successful negotiation of a devolution agreement with the Government of Canada and the creation of a GNWT energy policy group are two key implementation items that are integral to the long-term success of this Strategy. In addition, implementation of the actions in *the NWT Energy Strategy* will require a considerable amount of work in the areas of studies, policy reviews, development of new policies and programs, and ongoing monitoring of the progress and results achieved.

A separate document, entitled *the NWT Energy Strategy Implementation Plan*, is being developed to organize, prioritize and assign all the work required to implement the actions contained in this Strategy. The Implementation Plan will be released at a later date.

Final decisions on specific initiatives will be made over time depending on factors such as: the GNWT's fiscal situation and priorities for the GNWT's 2004-2007 Main Estimates; climate change funding negotiated with Canada: and the ability of the various NWT energy stakeholders to work in partnership to achieve common goals.

Following is a preliminary list of the detailed initiatives under consideration for inclusion in the Implementation Plan.

Action #1 – Provide energy management programs for commercial and residential energy users to assist them in managing their energy use. Specific program ideas include:

1.1 Providing low-cost energy audit services

1.2 Assessing energy efficient appliances and products

1.3 Developing retrofit loan funds

1.4 Providing incentives to be energy efficient

Action #2 – Implement energy management programs in government departments to improve energy efficiency in existing government facilities and in new government-funded construction. Specific ways to do so include:

2.1 Retrofitting existing facilities

2.2 Training staff and occupants to be energy efficient

2.3 Developing an energy efficiency standard for new construction

Action #3 – Implement programs to reduce fuel use in the transportation sector. Initial ideas under consideration include:

3.1 Implementing anti-idling programs

3.2 Developing supplies of alternative fuel sources

Action #4 – Develop policies and programs to accelerate the use of renewable energy and co-generation technologies. Specific initiatives include:

4.1 Assess renewable energy resource potential and appropriate renewable energy technologies for the NWT

4.2 Developing distributed generation guidelines

4.3 Assessing emerging co-generation technologies

4.4 Implementing a wind resource monitoring program

4.5 Implementing installation incentives and/or grant programs

Action #5 – Evaluate and develop viable small hydro projects to serve individual communities and work with Aboriginal partners and the diamond industry on a long-term development plan to meet the expected future electric load in the North and South Slave regions. Specific tasks include:

5.1 Conducting community consultations to determine interest

5.2 Conducting community-specific feasibility studies

5.3 Developing a North and South Slave hydro supply/demand study

Action #6 – Consider the appropriateness of, as well as possible alternatives to, the Public Utilities Board continuing to retain exclusive jurisdiction for approving utility rate structures. Specific details have yet to be determined.

Action #7 – Continue to make strategic investments in infrastructure, training and business development related to the Mackenzie Valley natural gas reserves and pipeline project while engaging with the Government of Canada to provide its share of financial support for these preparations. Additional work is required to determine achievements to date and priority actions for the future.

Action #8 – Use a policy of sustainable development to represent the interests of the people of the NWT in the regulatory process. The GNWT will work to ensure these developments provide significant wealth to the people and governments of the NWT *and* are environmentally sustainable through the use of best practices. Key policy positions will be developed as regulatory filings occur.

Action #9 – Continue to work in partnership with interested Aboriginal governments to examine and discuss the impacts and benefits of possible NWT hydroelectric projects and support the development and construction of hydro projects that have the approval and support of Aboriginal governments. The NWT Power Corporation's Hydro Secretariat is responsible for this action.

Action #10 – Undertake initiatives to build knowledge of traditional and western science aspects of climate change, including northern impacts and adaptation issues, and support efforts to develop long-term adaptation strategies. Specific initiatives include:

10.1 Organizing community workshops and scientific studies

10.2 Organizing community-based impact monitoring networks

10.3 Developing adaptation strategies to address expected impacts

Action #11 – Integrate greenhouse gas emissions and other environmental considerations in the design, environmental assessment, implementation and regulation of all new resource development projects. Specific initiatives may include:

11.1 Monitoring and reporting on greenhouse gas and other air emissions

Action #12 – Develop and implement consistent standards and codes of practice to ensure resource developments are environmentally sustainable through the use of best practices. Initiatives currently underway include:

12.1 The development of an air quality code of practice for the oil and gas industry

Action #13 – Create an energy policy group within the GNWT. This group would take lead responsibility for the implementation of the actions contained in *the NWT Energy Strategy* and track, measure and report on the progress achieved. This action will be considered in conjunction with the review of options for Government of the Northwest Territories departmental and headquarters corporate structures.

Specific details have yet to be determined. Possible responsibilities could include:

13.1 Identifying and resolving inconsistencies in existing GNWT energy-related policies and legislation

13.2 Researching and developing new energy-related policies, programs and legislation

13.3 Working with communities to develop community energy plans

13.4 Developing an energy technology assessment program

13.5 Providing policy direction to the NWT Power Corporation

Action #14 – Concluding a devolution agreement that ensures the necessary provincial-type powers, authorities and revenues are transferred so that energy strategies and policies can be implemented effectively. Conclusion of a devolution agreement should occur before the construction of a Mackenzie Valley pipeline and prior to the expected increase in resource development activity that the pipeline is expected to generate. Current and future steps include:

14.1 Negotiating a Framework Agreement which will set out the general approach for detailed negotiations

14.2 Each party seeking a mandate from their governments to negotiate a Devolution Transfer Agreement

14.3 Negotiation of a Devolution Transfer Agreement

GLOSSARY

Active solar thermal: Active solar thermal systems collect heat from the sun through various types of collectors and deliver the heat into buildings through hydronic or air handling systems.

Biomass: Organic material that can be used as an energy source. In the NWT, this refers to wood and wood products.

Climate change: The worldwide change in weather, particularly noticeable in the North, that is thought to be a result of greenhouse gas emissions.

Cogeneration / Combined heat and power systems (CHP): Cogeneration, or CHP systems, produce both heat and power. CHP units convert a fossil fuel (usually natural gas) into electricity and use the heat produced for space heating.

Community energy planning: A process that brings together all stakeholders at the community level to develop a plan that outlines the best energy options for the community and a strategy to put them into effect.

Community grid: The system that distributes electricity throughout a community.

Diesel zone communities: NWT communities in which electricity is provided by diesel-powered generators. (Also referenced as “diesel-electric communities” in document).

Distributed generation: The practice of permitting a wide variety of electrical generation from decentralized sources access to the electrical grid to sell any surplus they may be producing.

Energy audits: A survey that shows how much energy is used in a home, commercial or government building or a community.

Energy providers: The public or private agencies that sell energy, such as electricity, gasoline, propane, natural gas or diesel fuel.

Fuel cell: An electrochemical device that converts chemical energy directly into electricity.

Fossil fuels: Fuels formed in the ground, over millions of years, from the remains of dead plants and animals. Oil, natural gas and coal are fossil fuels.

Geothermal energy: Energy produced by the internal heat of the Earth or by low level ambient heat in the ground or in bodies of water. In the NWT most usable geothermal energy is found in the ground in permafrost-free areas in lakes and rivers.

Gigajoule: A unit of energy equal to one billion Joules.

Gigawatt: A unit of power equal to one billion watts; one million kilowatts, or 1,000 megawatts.

Green energy: Energy produced from renewable energy resources.

Greenhouse gas emissions: Gases such as water vapour, carbon dioxide, tropospheric ozone, methane and low-level ozone that are thought to contribute to global warming.

Hydro zone communities: NWT communities in which electricity is either fully or partially provided by hydro developments.

Joule: A unit of energy. One joule per second equals one watt.

Kilowatt (kW): A standard unit of electrical power equal to one thousand watts, or to the energy consumption at the rate of 1000 joules per second.

Kilowatt hour (kWh): A unit or measure of electricity supply or consumption of 1000 watts over the period of one hour.

Large-scale hydro development: Hydroelectric structures that can produce in excess of 100 MW of electricity.

Medium-scale hydro development: Hydro developments that produce more than 10 MW of power.

Megawatt (MW): 1000 kilowatts or one million watts. This is the standard measure of electrical power plant generating capacity.

Mini-hydro development: Mini hydro projects that produce less than 1 MW of electricity and have the potential to provide power to single residences and to act as alternate energy sources in diesel-powered communities.

Model energy efficiency codes: Model building codes that provide guidelines for maximum energy efficiency during construction.

Non-renewable energy: Energy produced from fossil fuels or uranium that cannot be renewed once the fuel runs out.

Passive solar thermal: Solar heat that is used without mechanical equipment. A building with windows placed to capture solar heat is an example of passive solar thermal energy.

GLOSSARY

Renewable energy: Energy that comes from sources that are maintained or replaced by nature after use. Examples of renewable energy include solar, wind, biomass, geothermal and hydro.

Small hydro: Hydroelectric projects generating from several kilowatts to 100 MW to meet the domestic demand for small customers.

Solar energy: Energy that comes from the sun.

Sustainable energy: Energy that meets the needs of the present without compromising the ability of future generations to meet their needs.

Wind energy: Energy produced by wind through the use of a wind turbine.

Watt: Unit of power, or work done per unit time, equal to 1 joule per second. It is used as a measure of electrical and mechanical power.

NWT Energy Strategy

Further inquiries or requests for additional copies can be directed to:

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