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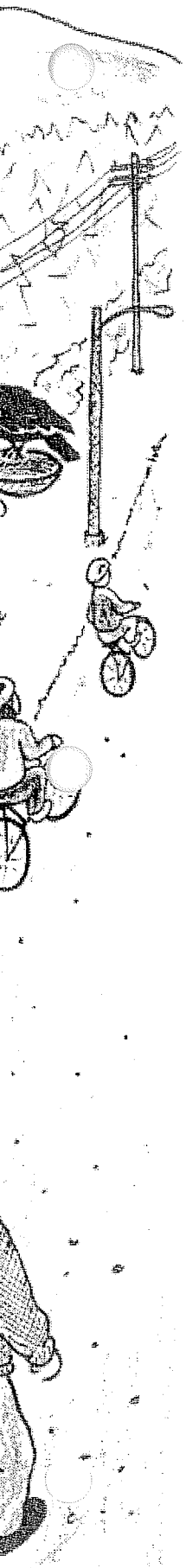

CABINET COMMISSION ON ENERGY

Final report

TOWARDS A COMPREHENSIVE ENERGY POLICY FOR THE YUKON

September, 1998

Yukon

MESSAGE FROM THE COMMISSIONER

On behalf of the Cabinet Commission on Energy, I would like to express my thanks and appreciation to the many people who assisted me in the preparation of this report.

As noted elsewhere, broad public consultations comprised a major component of the Commission's activities. I would particularly like to thank the members of the public who responded to the questionnaires, the industry and other stakeholders who attended the technical working meetings and those individuals who contacted the Commission to share their views and concerns about energy issues in the Yukon. Their input represented an extremely valuable contribution to the work of the Commission.

I would also like to thank the government for giving me the opportunity to serve as the Energy Commissioner and to lead the work of the Cabinet Commission on Energy. As well, I wish to recognize the hard work and level of commitment of the staff members who assisted in this process.

I anticipate that there will be ongoing interest on the part of the public and stakeholders in energy issues in general and the implementation of recommendations from this report in particular. Energy is a complex topic that affects all of us.

It is my belief that by working together we will ensure a stable, affordable and environmentally responsible source of energy for Yukon people now and in the future.

Gary McRobb, MLA Kluane
Energy Commissioner

EXECUTIVE SUMMARY

With this final report, the Cabinet Commission on Energy has brought to a close its work on the important public discussion of a complex topic — energy.

It was clear from what people said in answer to the questionnaire asking for input on energy issues, and at public meetings and in other forums, that they want and expect government to deliver on its promise of affordable and stable rates.

This report contains 56 recommendations, each of which is accompanied by a supporting rationale. In developing the recommendations, every effort was made to reflect "what was heard" during the consultation process. The key recommendation in the report is the establishment of a Rate Stabilization Fund which would smooth out the impact of rate changes approved by the Yukon Utilities Board and provide consumers with the ability to predict electricity budgets with greater certainty. The fund would also provide consumers with protection from adverse rate impacts while other rate stabilization initiatives are pursued.

While people recognized the value and benefits to the Yukon's economic health of industrial activity, they also indicated a keen interest in energy conservation, environmental protection and the importance of ensuring that energy resources are developed in a sustainable manner. These concerns are reflected in the recommendations.

It was very clear from the level of participation in the Commission's consultation process that Yukon people take considerable interest in energy issues, including how decisions related to energy matters are made. It was evident that people want energy decisions to be made in an open and accountable manner and this is addressed in the report's recommendations.

Some other highlights from the recommendations include:

- development of a Green Power Initiative to encourage and assist with the establishment of Green Power generation facilities in the Yukon. This would include a demonstration pilot project, preferably with the participation of Independent Power Producers (IPP);

- energy management and conservation measures, including bringing back a program like Powersmart™, which was targeted at helping people reduce their overall energy costs and ensuring that people have easy access to information on how to better manage energy consumption in their homes;
- the start-up and development of Community Energy Management (CEM) at the community level. The principles underlying CEM are energy efficiency, making use of local energy resources and sustainable community design;
- while recognizing the benefits of industrial development through jobs and economic activity, reducing the financial risk to consumers associated with providing energy to large industrial customers.

All of the recommendations in this report are important and reflect the issues that concern people. They will assist the Yukon government, in concert with individuals, industry and other governments, to guide informed energy decisions that contribute to environmental, social and economic goals and meet the challenge of providing reliable, affordable and sustainable energy to the people of the Yukon.

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INTRODUCTION

A COMPREHENSIVE ENERGY POLICY FOR THE YUKON

Decisions on how energy is produced and used have profound implications for the Yukon's environment, our economy, and our society as a whole. This demands that energy be managed with care and planning in the interests of individuals and industry. The Yukon government created the Cabinet Commission on Energy in 1996 to consult with Yukoners towards the development of a comprehensive energy policy for the Yukon. A comprehensive energy policy will set out a framework to guide informed energy decisions that contribute to environmental, social and economic goals. This can lead to energy development, distribution and use being cleaner, more affordable, and sustainable.

A comprehensive energy policy is also demanded by the high level of concern and interest with which Yukoners approach energy questions, and the importance of ensuring the availability of reliable energy necessary to support a healthy economy. With our cold winters, and the great distances between our communities, we have a unique perspective on the role energy plays in our lives. In recent years, we have become particularly concerned about the sustainability of energy resources, and we are concerned that the way energy is being used, or misused, today will create problems in the future. The link between energy production and use and the degradation of the environment has never been so widely understood, and particular attention is being paid to how fossil fuel combustion contributes to global warming.

Yukon people also have some specific and nagging concerns about electrical energy, primarily to do with the cost of electricity and the need for stability in electrical rates. How electricity is produced is also an important issue, and Yukoners want to see efficient yet environmentally-friendly electrical generation that balances electricity supply with demand. They also wonder whether the institutions responsible for regulating and operating electrical utilities are effective, efficient and accountable.

The Cabinet Commission on Energy appreciates the contributions from the many Yukoners who participated in this important policy process to this point. People deserve and expect proper management of their energy resources and we are confident that we have taken a very significant step towards meeting that expectation.

THE CABINET COMMISSION ON ENERGY

Mission

It was recognized early on that much valuable work had preceded the establishment of the Commission, such as extensive public consultation on the Yukon Conservation Strategy, Yukon Economic Strategy, and the Yukon Energy Strategy. These processes identified four goals that appeared to have consensus support in the Yukon, and are widely-accepted across Canada. These four goals guided the Commission's work:

1. the sustainable development of energy resources;
2. the efficient use of energy;
3. a secure supply of reliable energy; and
4. affordable energy.

The first of these goals, the sustainable development of energy resources, is an overarching theme. In the context of an energy policy, sustainability can be defined as:

Energy production, distribution and use that does not compromise:

- the ability of future generations to produce and use energy;

- the health of the environment;

- the future availability of efficient, secure, reliable, and affordable energy supplies.

Energy policies that are not sustainable will fail, just as any activity that is not sustainable cannot be maintained over time. The goals listed above are inherently linked to sustainability.

In carrying out its work and consulting formally and informally with a broad cross-section of Yukon people, the Commission found no reason to alter these four goals. However, it became clear that one additional goal was in order:

- openness and accountability in energy decision making.

Yukoners want the people who make energy decisions on their behalf to do so in an open and accountable way. Greater accountability will improve the mechanisms by which the goals of sustainability through efficiency, reliability and affordability will be achieved. The Commission found, time and time again, that Yukon people believe this is a priority.

These five goals underlie every recommendation in this report and are the foundation for a Yukon energy policy.

Work plan

The Yukon government's expectations for the Commission were articulated in the government planning document *Action Agenda 1997-2000*, which was released in October, 1997. This document emphasized the government's interest in seeing an energy policy that would address, among other issues, the following priorities:

- bill relief and other forms of electrical rate subsidy;
- cost-effective ways to increase public participation in the regulatory process of the Yukon Utilities Board;
- potential of alternative energy supply options and use of undeveloped energy sources.

Process

In fulfilling its mission, the Commission undertook a variety of activities. During its first year, the Commission completed research on numerous topics, and produced discussion papers and technical papers on energy issues facing Yukoners. A list of these papers, and how they can be obtained, is provided in Appendix II to this paper. Also during this time the Commission met with a number of stakeholders, government departments, corporations, non-government organizations and members of the public to discuss energy issues and listen to concerns and ideas on how best to develop policies beneficial to all Yukon people.

In February, 1998, the Commission released a document entitled *Energy Options for the Yukon*. This paper, which represented a summation of the first phase of the Commission's work, was, in effect, a draft energy policy framework distributed for public comment. Some important background information can be found in this document, such as data on energy use in the Yukon. These data, and the discussion and technical papers mentioned above, contain significant background information to this report and its final recommendations. Anyone interested in a complete picture of how these recommendations were arrived at is encouraged to review *Energy Options for the Yukon*, as well as the other discussion papers listed in Appendix II.

Important as the research phase of the Commission's work was, the essential part of the process the Commission followed was public consultation. There were four main components in this process, which was conducted during the spring of 1998:

1. Community meetings

Public meetings were held in most Yukon communities, and with First Nations and local government officials. These meetings allowed for discussion on a broad range of energy issues.

2. Questionnaire

A questionnaire asking for input on specific energy issues was mailed to every Yukon household. 763 completed questionnaires were returned.

3. Energy policy working meetings

Energy policy working meetings were technical sessions involving energy stakeholders. Extensive meetings were held on the topics of: i) rate stabilization and rate relief; ii) energy supply options; iii) regulatory processes; iv) energy efficiency; and, v) accountability, ownership and corporate structure.

4. Community Energy Management (CEM) workshop

The CEM workshop brought together CEM experts, Yukon community leaders, planners and professionals involved in the energy sector. The workshop focused on the principles and practices of CEM and drew from participants' practical experience in overcoming barriers to CEM. It combined expert presentations, videos and a panel discussion.

Reports summarizing the results of these processes have been released. (See list in Appendix II.) The information in these reports has been integral to the development of the Commission's final recommendations.

In addition to the spring 1998 four-track consultation process, the Energy Commission undertook additional consultation exercises. In the fall of 1997, meetings were held with energy stakeholders and the public to discuss rate relief. The Energy Commissioner also travelled to places such as Faro to meet with the mayor and council, and to Watson Lake, to meet with the Liard First Nation, the Chamber of Commerce and Signpost Seniors.

The Commissioner also met with people representing the City of Whitehorse, the Association of Yukon Communities, Northern Research Institute, Independent Power Producers, Utilities Consumers' Group, and Yukon Conservation Society. Correspondence from stakeholders, non-government organizations and interested members of the public was also taken into consideration. Energy issues were highlighted by the proclamation of Energy Awareness Month in November, 1997 and through the Commission's Energy Expo held at Yukon College.

Policy environment

No public policy process operates in isolation, and the Cabinet Commission on Energy process was no exception. The past two years have been eventful ones in the Yukon's electrical energy sector. The Anvil Range mine in Faro, the Yukon's major industrial customer which, when operating, consumes 40 per cent of the power produced by the Yukon Energy Corporation (YEC), closed, re-opened and then closed again during this period. Another notable change was the move by the publicly-owned Yukon Energy Corporation to direct management of its assets, a change from the past practice of contracting this work to the Yukon Electrical Company Limited, a private sector

company. And, in April, 1998, the Yukon government terminated its rate relief program. As an alternative to rate relief the Cabinet Commission on Energy offered – and launched consultations on – a proposal for a Rate Stabilization Fund which would limit electricity bill increases in 1998 to a maximum of nine per cent above January, 1997 levels, and freeze bills for the following three years.

On July 30, 1998, the Yukon Utilities Board released *Decision #1998-5* regarding 1997 and 1998 electricity rates. The decision confirmed the Yukon Energy Corporation's 1997 rates as final and directed that revenue shortfalls in 1997 and 1998 be collected using riders totalling 15.28 per cent, effective August 1, 1998. While not approving the establishment of YEC's proposed Rate Adjustment and Stabilization Fund, the Yukon Utilities Board did direct that the Diesel Contingency Fund be used to offset the rider increases over the next 12 months. However, the result is that, in the next year, bills for residential customers will be about $10 per month higher than under the Commission's Rate Stablization Fund proposal. Beyond 1998-1999, rates will be significantly higher.

These events have lent an urgency to the work of the Cabinet Commission on Energy. Original schedules and time tables were re-arranged, and initial assumptions about the very nature of the Commission's work were tested. The Commission's work plan became a general guide, rather than a rigid schedule. However, the net result is that the Commission's recommendations have been forged in a climate of heightened scrutiny of public energy policy. This ultimately has been a benefit to the Commission and has contributed to the quality of its results as presented in this report.

HOW THIS REPORT IS ORGANIZED

Based on the results of research and public consultations, this report is organized into two main sections.

The first section deals with energy management of all energy systems, including home, business, government and at the community level. It targets opportunities for managing these energy systems in a rational and sustainable way.

The second section focuses on four key electricity issues which Yukon people have shown great interest in addressing:

1. Fairness, affordability and stability;
2. Electricity supply options and efficiency;
3. Regulatory processes;
4. Accountability, ownership and corporate structure.

Problems in these areas over the past several years have had a cumulative effect and have frustrated many Yukoners who want to see the problems resolved in an open and

accountable way. As such, electricity issues have been given a priority position within this report.

Energy management and the four electricity issues comprise five main sections in this report. Each of these sections consists of three parts: an introduction; a summary of what was heard during consultations on these topics; and a set of recommendations.

The policy thread that links these sections together is sustainability. Energy management is a comprehensive approach toward making the energy sector more sustainable. The recommendations on electrical issues will address key electricity problems by enhancing the sustainability of the electric sector.

Appendices include the recommendations grouped by time frame, a glossary and a list of acronyms used in this report.

THE RECOMMENDATIONS

The recommendations in this final report are directed to the Yukon government. It will be the role of government, through its various departments and agencies, to develop a plan for implementing the recommendations. The completed plan will determine how best to implement a comprehensive energy policy and assign responsibility for implementation.

The recommendations are the product of much research, consultation and analysis, and attempt to both include and balance the often-competing views of hundreds of Yukoners.

To the greatest extent possible, recommendations are practical and action-oriented. To assist in their implementation, they have been divided into four categories – general, short-term, medium-term and long-term.

- **general**: ongoing, not time specific, broad in scope
- **short-term**: implementation within 0 to two years;
- **medium-term**: implementation within two to four years;
- **long-term**: implementation within four or more years.

ENERGY MANAGEMENT

INTRODUCTION

Energy is managed at many levels. Individuals manage energy used in homes and businesses including electricity, heating and transportation fuels. The private sector supplies energy resources for heating and transportation. Electrical utilities manage the supply and distribution, and may influence end use of electrical energy systems. The Yukon government provides analysis of energy systems, integrating policy and practice to facilitate sound energy management decisions at all levels.

Energy use decisions are enhanced by access to energy efficient products, services and information, as well as a wide range of management tools used to balance the costs and benefits of available options. These decisions need to be considered at the design stage (for example, when a subdivision is being planned), during the operation (for example, keeping the car tuned) and in the use of waste products (for example, heating buildings with the waste heat from diesel generators).

Sound decisions on energy use help to save money and contribute to the integrity of our environment. Yukoners have confirmed their commitment to using energy efficiently in the past by achieving high per capita uptake of R-2000 housing units and PowerSmart™ products when compared with other jurisdictions in Canada. Past and present Yukon government energy programs have consistently been successful. Many people are keen to save both money and energy and look for ways to do so.

Energy efficient technologies and energy services are growth industries vital to the development of a sustainable economy. Along with these tools and products, more comprehensive approaches to energy management, and in a broader sense to resource management, are evolving as tangible actions to help achieve sustainable development.

Community Energy Management (CEM) is energy management based on decisions made at the local level and carried out by the community. The decision process begins by assessing overall energy use within a community or region, and then uses appropriate tools to achieve outcomes that are cost-effective and most beneficial to the community and the environment. This process empowers communities by allowing people to realize the connection between energy management, the environment and community growth. These tools are not unique to CEM. CEM simply enables these tools to be harnessed an effective way.

Recommendations in this section are both broad and targeted to reflect the needs of all energy managers, encourage the use of a variety of tools and facilitate more unifying and wise decisions about energy use.

WHAT WE HEARD

People who participated in the consultation process identified the need to use energy more efficiently as a key issue. Access to information about energy efficient products and services, clarity around energy management issues, consistent government action and consumer choice options were also considered to be important issues.

Summary of energy policy working meetings

The energy policy working meetings identified barriers, opportunities and possible actions to achieve better use of energy resources. The following points were raised during one session on energy efficiency as well as other sessions such as supply options.

A complementary energy management program should be looked at in conjunction with rate stabilization to promote the reduction of energy demand.

- A complementary energy management program should be looked at in conjunction with rate stabilization to promote the reduction of energy demand.
- Efforts to assist larger customers in the efficient use of energy should continue.
- Energy efficiency programs that reduce winter energy use will benefit consumers as well as the environment.
- Consumption alone is not the best indicator of whether energy is being used efficiently. Reducing electricity consumption can be achieved by switching to other heating fuel sources, improving efficiency and using less energy through conservation.

Reducing electricity consumption can be achieved by switching to other heating fuel sources, improving efficiency and using less energy through conservation.

- Efforts to promote the efficient use of energy should be co-ordinated. Adequate program evaluation and follow-up is necessary.
- PowerSmart™ had significant consumer uptake but it is not known what niches new programs should target. Consumers need to see a real financial advantage before investing in "efficient" equipment or measures.
- Awareness programs are always needed but education comes with a price tag.

Support for reduced government consumption is tied to strong support, in general, for improving on the efficient use of energy.

- Some participants recognized that reduced government consumption could lead to higher rates for all classes of consumers. Support for reduced government consumption is tied to strong support, in general, for improving on the efficient use of energy.

- Yukon people will be slow to adopt CEM because of the costs and lifestyle changes required.

Questionnaire, CEM workshop and community consultations

The link between total energy use, including transportation fuel costs and home heating costs, and home energy management was not clearly articulated as an important issue. Many participants focused on the costs of electricity and did not consider these other energy costs. However, people did express a desire to see complementary programs to target the efficient use of energy, such as consumer education to support financial incentives.

Energy management in homes and businesses

"Innovative ideas for Yukon construction methods could be exported."

Yukoners have an interest in home energy management issues. The following comments illustrate the range of actions, opportunities and opinions participants discussed about energy use in the home and businesses.

- "There should be encouragement and subsidies to home builders who build homes to meet or exceed energy efficiency standards."
- "Innovative ideas for Yukon construction methods could be exported."
- "Yukoners already use energy efficiently."
- "With education comes knowledge and change. If consumers are aware of the consequences, they would reduce consumption."
- "Most Yukoners have already been forced to reduce consumption due to high rates."

"With education comes knowledge and change. If consumers are aware of the consequences, they would reduce consumption."

Energy management in government operations

Over 90 per cent of questionnaire respondents felt the Yukon government should reduce its own energy consumption.

- "All branches of government are extremely wasteful in regards to energy consumption."
- "I like the idea of incentives in school programs."
- "Every time I walk into a government office after hours there are computers and lights on. They need to lead by example."

"I like the idea of incentives in school programs."

Community Energy Management (CEM)

A few points were clearly articulated during the CEM workshop, which involved multi-stakeholders: CEM does not happen overnight. It requires a high level of commitment at all levels, regional co-operation and inter-agency co-ordination. CEM is not a linear process. It requires action on many fronts and the use of a variety of energy management tools.

Diverse opinions about energy use in general were collected through community meetings, workshops or written comments on the questionnaire. Consensus and consistency of opinions were not always found; however, a number of common "themes" emerged around the subject of community energy management:

- conservation and efficiency make sense;
- the Yukon government should not dictate changes but should provide incentives for CEM;
- issues around compliance need to be well thought out; and
- recognize that the "Yukon lifestyle" promotes independence and self-sufficiency, which could be a barrier to adopting CEM approaches.

Community land use planning

About 60 per cent of questionnaire respondents said they would support the development of special land use and zoning standards to encourage energy conservation.

- "Zoning and land use standards aren't there to encourage; they are there to be followed. We are already over-regulated."
- "Land use planning is a municipal responsibility. YTG can advise."

Transportation

Two-thirds of respondents supported government efficient transportation measures; included was support for ideas such as using high-efficiency vehicles, alternate-fuel vehicles, and tele-commuting.

- "I would like to see emissions testing done to...ensure that vehicles are burning fuel properly."

"Tele-commuting could ve government millions of dollars."

"Don't re-invent the wheel. Use studies from other jurisdictions."

- "Tele-commuting could save government millions of dollars."
- "Any measures should be cost-effective first."
- "Don't re-invest the wheel. Use studies from other jurisdictions."

Site and building design and operation

Almost 80 per cent of the survey respondents said they would support the development of design standards for new buildings in order to achieve greater energy efficiency.

- Site and building design for energy efficiency should be optional not imposed.
- Programs need to be cost effective and stay at "encourage" not enforce. Enforcement usually hurts the least wealthy in any community.

RECOMMENDATIONS

ENERGY MANAGEMENT IN OUR HOMES AND BUSINESSES

Recommendation no. 1

Yukoners should move away from electric heating systems as the primary source of heating. [general recommendation]

Policies prescribing home heating methods have often met with criticism. This criticism is justified if policies change with fluctuations between electricity supply and demand. However, the high cost of providing and, in most cases, purchasing, electric space heating is an incentive for Yukoners to use alternatives to heat their homes and businesses. Uptake of the Yukon government's existing Residential and Commercial Electricity Management Programs has been good, indicating the programs are helping to address the need to provide financial support to convert to alternatives. Cost-effective dual fuel heating systems should always be encouraged as an effective energy management practice.

Dual fuel refers to a heating system that uses two or more sources. Frequently the preferred fuel is surplus (secondary) electricity when it is available, and the backup heating source (normally oil or gas) can supply heat automatically when less expensive secondary electricity is no longer available.

Recommendation no. 2

The Yukon public should have easy access to information on how to better manage energy consumption in their homes. [short-term]

Public education and outreach programs should be designed to encourage informed decision-making on energy management at all levels. Government should strengthen its role as a resource and facilitate the development of a strong public knowledge base on energy issues, particularly opportunities for efficient end use. Promoting activities such as Yukon Energy Week and participating in trade shows could be used to provide information to the public on energy efficiency and conservation.

Efforts by the private sector, utilities, non-government organizations and government agencies (for example, Yukon Housing Corporation) to deliver efficiency programs and products should be enhanced, not duplicated.

Programs should be linked to – and complement – existing incentives, outreach programs and regulations and be designed to build partnerships. Education and outreach programs could target the following areas: design (for example, energy considerations for home renovations or subdivision planning); operation (for example,

efficient furnace maintenance, vehicle tuning and emissions); products (for example, informing consumers about product availability, cost savings and opportunities); services (for example, energy audits, existing or new training and loan programs). Outreach programs and activities should offer opportunities for the public to provide input on ongoing energy issues.

Recommendation no. 3

Bring back a PowerSmart™ type of program targeted at total energy use. [short-term]

Consumers should be provided with information about how home and business energy costs can be reduced without sacrificing the level of comfort and lifestyle Yukon people have come to expect. Both broad and targeted public education programs should be established to encourage information dissemination about the efficient use of energy. All opportunities for public education should be explored, including the establishment of a website providing information on the efficient use of energy.

Consumers and businesses need to be made aware that they can save money, be more comfortable and help maintain the integrity of the environment by using energy more efficiently. Using energy efficiently also contributes to the local economy by requiring local services, expertise and products. While the government is already very active in this area (for example, EnerGuide for Houses, Home Repair Program, Residential and Commercial Electricity Management Programs) a more co-ordinated and higher profile approach is needed. Delivery of programming by a non-government organization should be considered.

Recommendation no. 4

Local market development of products that enhance and support the efficient use of energy should be encouraged. [medium-term]

Efforts can target small and medium businesses and First Nations organizations that provide energy supply service and energy efficient products, as well as businesses that benefit from better access to energy efficient products and services. Government can contribute to the viability and availability of energy efficient products and services through consumer education, marketing support and facilitating partnerships.

By investing in proven technologies to increase the efficient use of energy or to develop an alternative supply option, government can increase the market availability of those products and services for private consumers. For example, energy efficient lighting (with T-8 fluorescent lighting, polished reflectors and instant start ballasts) has become standard in the Yukon government and, as a result, is also readily available for all consumers. Other examples include the use of ultrasonic motion detectors, direct digital building controls and electric boilers to take advantage of inexpensive surplus hydroelectricity where opportunities exist.

Government should seek out means to maximize the economic opportunities and minimize the costs of reducing our greenhouse gas emissions.

Recommendation no. 5

Develop trade and investment opportunities and cultivate export markets in circumpolar nations for Yukon expertise, products and services in the energy sector and continue to encourage technology transfer and applied energy research. [general]

Yukon people have expertise in northern building materials and practices, small-scale energy supply and district heating systems. In partnership with stakeholders, government can actively encourage investment in the Yukon by marketing the region, climate and geography as a proving ground for new and cutting edge energy technologies that meet Yukon environmental standards.

Government can also help realize the export potential of Yukon expertise, technology and services such as qualified R-2000 builders and locally produced building products. Funding partners can be sought to support ongoing research in such areas as wind technology and district energy systems.

ENERGY MANAGEMENT IN GOVERNMENT OPERATIONS

Recommendation no. 6

Eliminate conflicts with Community Energy Management (CEM) principles, specifically in the areas of:

- **community planning;**
- **resource management. [medium-term]**

The three key principles underlying CEM are energy efficiency, making use of local energy resources, and sustainable community design. CEM processes integrate traditionally isolated planning processes. Policy development and evaluation will require the development of CEM criteria and the participation of stakeholders involved in community planning. Complementary elements of existing strategies such as Protected Areas and Forestry Management should be identified and expanded.

The outcome of the current review of the *Municipal Act* will likely give local governments more autonomy in certain areas such as community planning and development. Policies should be reviewed for opportunities to include CEM approaches, and opportunities for the Yukon government and community governments to facilitate their implementation.

Recommendation no. 7

Yukoners should be provided with information about the links between energy use, local environmental impacts, greenhouse gas emissions and climate change. [medium- to long-term]

The production of greenhouse gas emissions that could lead to climate change is inextricably linked to energy production and use – primarily the combustion of carbon-based fuels. Government should work with partners to inform the Yukon people about emerging climate change science, measures individuals can take to reduce greenhouse gas emissions as well as actions being taken in other regions in order to enable Yukoners to make better energy management decisions. Part of the $50,000 allotted for climate change issues in the 1998-1999 Yukon government budget has been allocated to these initiatives.

Recommendation no. 8

Yukon Housing Corporation programs should target energy efficiency in the residential sector to identify opportunities for efficiency in the design and operation of buildings as well as products and services. [medium-term]

Cost-effective program(s) should be reviewed with a view to ensuring that they target areas showing the greatest opportunities to benefit Yukoners and minimize energy use. Opportunities for synergy between programs need to be addressed.

Yukon Housing Corporation (YHC) is the licensee for the EnerGuide for Houses Program and the R-2000 Program; EnerGuide is an energy auditing and rating program for residential dwellings. Affordability can be a factor for people considering making changes to improve energy efficiency in their homes and needs to be taken into account. Providing for low-cost energy audits is one way that could be considered to address this concern. YHC will be maintaining the R-2000 housing registry and certification standards, providing training to builders, promoting and marketing R-2000. The Yukon Housing Corporation works with the home inspection community to advance energy efficiency in the residential sector.

YHC also administers the Residential and Commercial Electricity Management Loans Programs (REMP and CEMP) as well as the Home Repair Loan Program that has an energy efficiency mandate.

Recommendation no. 9

Government should encourage reduced vehicle use through:

- **a tele-commuting pilot project; and**
- **a program that rewards employees for using alternative transportation methods, including car-pooling and greater use of public transit. [short-term]**

The transportation sector accounts for the majority of fossil fuel consumption and consequently the most greenhouse gas emissions in the Yukon. Review of existing programs in other jurisdictions should be carried out and a made-in-the-Yukon program developed and made available to Yukon employers, including small business operators, in the private sector. Tele-commuting involves offering employees the opportunity to work from home and might involve providing support in the form of some technical resources. A tele-commuting project could be a private sector or government project, or government in partnership with the private sector, including small businesses. Results should be monitored and made available for public education.

Recommendation no. 10

The *Energy Management Plan for Government Buildings* should identify and address design and operational barriers to reducing operating costs and greenhouse gas emissions. [medium-term]

The current plan for managing energy in government buildings is designed to reduce operating costs and greenhouse gas emissions and to use local fuels wherever possible. Results to date have been encouraging with over $200,000 in annual savings to government as a result of energy retrofits. The success of the program is, in part, due to the ability of the individual units (for example, schools) who pursue the energy savings to keep the dollars saved. This incentive should be continued and the success of the

program publicized. Energy audits of government buildings not currently participating in the program should be completed. Government should encourage the owners of buildings it leases to enhance efficiency through performance contracting.

Measures already taken to improve the efficiency in operations, such as use of energy efficient lighting and dual fuel for heating have proved successful. This success should be expanded to include energy efficiency and energy use standards in the design phase of new government buildings and retrofitting of existing buildings. Better understanding of the costs and benefits of adhering to energy codes should provide the basis for developing recommendations to government on standards and objectives for meeting the energy codes in the private sector.

Electricity prices are designed to recover the costs incurred by the utility. If government uses less electricity as a result of efficiency measures, there would be an impact upon other ratepayers. If less units of energy are sold, the price for each unit of energy increases in order to ensure that all costs are still recovered. Government pays considerably more per kWh for electricity than the cost of service. It is, therefore, important that the potential negative impact on other energy users of reduced government energy consumption be taken into account in examining these proposals.

Recommendation no. 11

Government should explore appropriate alternative fuels and/or vehicles for use within the government fleet. [general]

This could include pilot testing and monitoring of selected "cost-effective" fuels and vehicles. The results of any testing and monitoring should be provided to the Yukon public.

ENERGY MANAGEMENT IN THE COMMUNITY — CEM

Recommendation no. 12

Communities should be provided with resources to facilitate the start up and development of Community Energy Management at the community level. [short-term]

Government should, in partnership with stakeholders, provide advice and facilitate the development of local management expertise in the CEM process and technical expertise to apply the tools (for example, district heating systems). This may include education, development of guidelines and ideas for action, workshops, training, and/or identifying potential funding sources for projects.

In order for CEM to become an effective process, on-going outreach work will be required to increase general public awareness about the integration opportunities inherent in CEM.

Recommendation no. 13

With community and government partners, the Yukon government should facilitate three community-based sustainable energy projects. [short-term]

These projects, to be completed within two to three years, would serve as an example that could generate interest in other community-scale energy projects. Projects could include district energy distribution systems, Green Power generation and innovative means of waste heat recovery. Studies should be undertaken in Yukon communities to identify opportunities where district heating could be viably pursued. These model projects should be carried out in conjunction with the development of CEM processes.

Implementation of this recommendation could be considered in conjunction with Recommendation no. 38, which provides for the planning and implementation of at least one alternative energy pilot project.

Recommendation no. 14

Territorial, municipal and First Nations governments should work in partnership to develop special community land use and zoning standards (for example, density, mix of use, proximity, infrastructure). [medium- to long-term]

The link between appropriate land use planning and maximizing energy efficiency appears to be well understood by local decision-makers and should be clarified for the public. Barriers and information gaps in addressing the importance of energy considerations in land use planning should be addressed. Standards could be revised to:

- take advantage of opportunities for district heating systems and the use of waste heat;

- promote appropriate building design and orientation to make use of solar radiation; and
- minimize transportation requirements by designing mixed use subdivisions.

Recommendation no. 15

Transportation use in government operations, by individuals and industry should be targeted as a means to reduce operational costs and improve environmental standards. [medium- to long-term]

As part of a stepped approach to addressing transportation as an energy issue for the Yukon, transportation strategies in other jurisdictions should be reviewed and built upon as appropriate for the Yukon. Market opportunities for alternative fuels, approaches to reduce vehicle use, transportation planning issues, means for improving vehicle fuel efficiency and analysis of vehicle emissions should be examined. Municipal responsibilities in this area should be acknowledged and incorporated where appropriate.

Recommendation no. 16

Demonstration project(s) that illustrate design processes, building materials and construction practices should be developed to educate the Yukon public and contractors about potential energy savings to be realized through sound building practices and operation. [medium- to long-term]

Demonstration projects should build on initiatives such as the Yukon Housing Corporation's research and applications of innovative residential heating and ventilation systems and R-2000 building design. Projects could be carried out in partnership with the building community and other government and non-government agencies. Projects should help to enhance an integrated understanding of better energy management practices, for example, how energy efficient technology combined with better practices can help to lower energy costs. Funding for demonstration projects should be sought from outside of government.

Recommendation no. 17

The private sector should be encouraged to use performance contracting and related opportunities to improve efficiency of existing commercial building stock. [medium- to long-term]

The existing Commercial Electricity Management Program (CEMP) is currently the only energy-related commercial sector government program. Educational and/or program opportunities should be examined to provide incentives to this sector to enhance energy efficiency in existing buildings, and to improve energy management and design of commercial buildings. Performance contracting refers to the practice of directly relating compensation to the level of performance of the contracted work. For example, an

energy management contractor could be contracted to examine energy efficiency opportunities and paid on the basis of energy savings realized over a specified period, with no payment up front for the work being contracted.

Recommendation no. 18

Governments should examine ways to develop site and building standards (site layout, building efficiency) to improve the energy efficiency of local housing stock. [long-term]

The goal of standards, which should be developed using existing national standards as a basis and in conjunction with local levels of government and the housing industry, should be to improve energy efficiency of local housing stock and increase opportunities for site-based energy supply technologies. These standards should incorporate National Energy Codes and build on government's exploration of the costs and benefits of adopting these codes. Training needs and opportunities should be identified and carried out as parallel activities.

ELECTRICITY ISSUES

INTRODUCTION

Electricity, especially its cost, stands out as the single most publicly discussed energy issue in the territory. For this reason electricity prices and related issues dominated the work of the Cabinet Commission on Energy.

Electricity issues involve many players and are complicated in many ways; they defy easy explanation and, combined with price instability, frustrate the public. Yukon people made it clear to the Commission: they want stable, affordable prices.

Establishment of a new rate stabilization initiative is an important component of an overall strategy and speaks to the public's call for an end to the roller-coaster ride of electricity prices.

While people in general have little appetite for the minutiae of most electricity issues, a number of interested persons and organizations have contributed substantially to this consultation process, as well as to other forums. It is anticipated that this participation, coupled with the continued involvement of these individuals and organizations, will encourage an open, accountable and efficient electricity system for the Yukon, whether the topic is price, supply, regulation or ownership and accountability of the utilities.

During the consultations, there were suggestions by some people that electricity issues should no longer be "politicized." The view was expressed that many of the issues discussed in this report should somehow be dealt with independently of government and removed from the hands of elected representatives. At the same time, a clear majority want government to take decisive action on issues that concern them, especially price.

The Cabinet Commission on Energy was established to gather public views on issues to provide guidance to decision-makers in government. The recommendations in this section are the product of that consultation; they call for government to act in a number of specific ways to meet the public's objectives on the most widely-discussed energy issues in the territory.

ISSUE: Fairness, affordability and stability

Introduction

The Yukon's electrical system suffers from relatively high levels of unpredictability in both supply and demand. The supply and demand imbalances, combined with lower population and customer densities, and the isolation of the grid from neighbouring jurisdictions, have resulted in a history of unstable electricity rates. Although there are higher electricity bills elsewhere in Canada, public concern over power bills is increased in the Yukon because of greater price uncertainty.

The challenge of balancing supply and demand is heightened by the fact that almost 40 per cent of electricity demand comes from the Faro mine, when it is operating. This mine has often shut down for protracted periods during the past 20 years which exposes the Yukon's electrical system to extreme shifts in generation requirements. On the supply side, most of the electricity carried on the Yukon's electricity grid comes from hydroelectric generation facilities (Whitehorse Rapids and Aishihik Lake) and water flows can fluctuate significantly from year to year.

The instability of electricity rates resulting from these supply and demand imbalances is directly connected to the fixed costs associated with hydroelectric generation, transmission and distribution facilities. Depending on the location and electrical load, a new mine coming on or off the system can impact rates for all customer classes. This is caused by the significant cost of incremental diesel generation and a change to the amount of hydro resources allocated to each customer class. If these costs are to be recovered from fluctuating amounts of electricity sales, the price per unit of electricity sold must be adjusted accordingly. When prices suddenly rise to offset a mine closure, other customers (residential, businesses, municipalities, government and industry) face unbudgeted bill increases. At the same time, people know the value of jobs and economic benefits that result from operating mines and realize that these are a significant factor in the Yukon's overall economic health.

The concept of "fair" is complex and at times contradictory. Some argue that all customers should pay the full cost of serving them. To others, fairness in electricity rates should reflect the consumer's ability to pay, given that electricity is considered a necessity of life, resulting in some means of ensuring affordable rates for low income residents. Conflicts emerge between fairness and other rate design principles/objectives when rates are designed through the regulatory process for each customer class to collect the overall approved utility revenue requirement.

Revenue-to-cost ratios show the revenue collected from each customer class as a percentage of a utility's cost of serving that class. A revenue/cost of 100 per cent means

that the revenue collected from the class equals the cost to serve the class. A revenue/cost of 80 per cent means that revenue collected from the class equals only 80 per cent of cost to serve the class.

In order for some groups to pay less than cost, other customer classes must pay more than cost. Based on information from the 1997 General Rate Application (GRA) analysis, about $1.84 million per year of added revenue is paid by the government commercial class at the current (1998) 143 per cent revenue/cost ratio versus a target ratio of 110 per cent. Since the federal government comprises about 60 per cent of this customer class, it contributes about $1 million annually towards lower power rates for all residential customers.

In its 1992 *Review of Cost of Service and Rate Design*, the Yukon Utilities Board recommended to Government that rate changes be implemented to recover 90 to 110 per cent of the utility's cost of service for each non-industrial class, with future improvements in cost of service studies to be pursued to allow a 95 to 105 per cent recovery to be attained. In 1996, the YUB directed YEC/YECL to design a Rate Shift Program that would target revenue/cost ratios for each non-industrial class in the range of 90 to 110 per cent over a ten-year period.

A priority for government is to act on commitments to achieve rate stabilization and to ensure that electricity is affordable. Rate comparisons with Alaska and Northwest Territories communities indicate that Yukon residents and businesses currently have affordable access to basic levels of electricity service. While removal of the government-funded residential rate relief program, as well as increasing rates to recover recent revenue shortfalls and to cover at least 90 per cent of service costs, would not fundamentally change this conclusion, many consumers could be adversely impacted. Some concerns were raised during early consultations that the needs of specific groups (such as seniors on fixed incomes and low income earners) have not been adequately addressed; but the broad application of rate stabilization initiatives should make electricity affordable for all.

The two closures of the Faro mine in one year have underlined the need to learn from experience and manage the impact of industry on electrical rates. A systematic and comprehensive action plan is required. For the majority of ratepayers, price stability is a key component of affordability. Long-term stabilization requires that electricity costs paid by consumers move to a sustainable level without being adversely affected by the fluctuation of major loads on the system or the phased-in elimination of long-standing cross-subsidies among customer classes.

The following table provides information on various kinds of subsidies.

Rate relief	A short-term, government-financed approach to reducing the impact of a rate increase. Relief (subsidy) is paid directly to qualified energy consumers, and shows up as a "credit" on power bills.
Bill relief	A subsidy applied to a power bill to reduce the amount that the customer has to pay.
Rate stabilization	A long-term initiative that will include a number of measures to reduce fluctuations in the cost of providing power to customers, including the use of a rate stabilization fund which will cushion ratepayers from changes to rates.
Cross subsidization	A cross subsidy is the practise of collecting more than the allocated cost of service for some communities or customer classes in order to reduce the amount collected from another class. Residential customers in the Yukon currently pay approximately 80 per cent of the allocated cost of providing electrical service while government customers pay more than 140 per cent of the allocated cost of service.
Rate equalization	Rate equalization is the practise of billing customers at a common rate for basic service, regardless of location and of the cost of providing electrical service in any Yukon community.

WHAT WE HEARD

Cost of energy

An overwhelming majority of respondents to the survey (93 per cent of 763 returned questionnaires) feel the *cost* of energy is important or very important. Almost 90 per cent said more *stable* energy prices are important or very important. Participants in all three components of the final round of consultation generally agreed that the "rate shock" they've experienced over the past five years is unacceptable, although much of this rate shock has been mitigated by rate relief.

While it was recognized that hydro-generated electricity costs considerably less to produce than diesel-generated, some people expressed frustration that up-to-date data on the *actual* cost of production is not always readily available. This data could also influence decisions respecting demand side management and alternative sources of generation.

Most people who took part in the consultation process were frustrated with the effect of the Faro mine on the Yukon's electrical system. The broadly held impression is that when the Faro mine went down, power rates went up, yet when the mine re-opened power rates climbed again instead of dropping back to the former level.

Participants in the energy policy working meetings noted that several factors affect rates: electricity demand, diesel fuel prices, climatic conditions, availability of water for hydro generation, as well as regulatory decisions concerning rate design (for example, equalization between communities, cross subsidies between customer classes) and recovery periods for debt collection.

Anger at the debt left by the Faro mine was clearly evident in the comments submitted on the returned questionnaires. Even when the question was on a completely different topic, perceptions about the mine's debt – and the role of the bureaucrats and politicians who many Yukoners appear to believe "let" the debt build up – were brought up repeatedly.

Other cost-related suggestions made during consultations include:

- use public/private partnerships when developing new sources of energy;

Use public/private partnerships when developing new sources of energy.

- review operations of the Yukon Energy Corporation (YEC), the Yukon Development Corporation (YDC) and the Yukon Energy Company Limited (YECL) to minimize waste and inefficiency;
- review existing practices, for example, why not turn off streetlights at times;
- do not give electrical utilities a regulated rate of return because it's a luxury no other business has;
- ensure industrial users pay for hook-up themselves – without the use of a government loan – and cut off power when the bill isn't paid.

Review existing practices, for example, why not turn off streetlights at times.

The Cabinet Commission on Energy proposed, in March, 1998, that the government stabilize consumer costs through the use of a Rate Stabilization Fund (RSF). The final round of consultation focused on rate stabilization and relief options specific to the cost of electricity. As well, participants in the energy policy working meetings looked closely at the regulatory regime, how it acts to control power rates and its effect on costs.

"Actual costs" versus "fair rates"

In discussions about the cost of energy, it was clear there was a fundamental clash of beliefs:

- **"Actual costs" (sometimes called "cost-based rates" or "the true cost of power") should be charged**: some felt that one set of consumers should not subsidize another, whether it is on the basis of community or customer class (i.e. residential vs. commercial vs. government). (This might also include seasonal and time-of-day considerations.) It should be noted, however, that there was disagreement over how "actual costs" should be determined, with different methodologies yielding different numbers.
- **"Fair rates" should be charged**: others wanted continuation of the present practise, that of government – and to a lesser extent business – subsidizing residential users, as well as the equalization of rates across the Yukon regardless of method used to generate power (i.e. hydro or diesel).

The working meeting discussions dealt with this issue in great detail; it was also flagged in a few comments submitted with the questionnaire and was raised at some but not all community meetings.

While some who supported "actual rates" did not object to the rate shocks that would result, others seemed to prefer to pay "actual rates" that are also stable. "Actual rates" can be an effective way to send signals to consumers to use electricity wisely and efficiently – and provide incentive for them to switch to other energy sources.

Those who supported "fair rates" did not necessarily oppose financial incentives such as time-of-day or seasonal rates. They did want to see them applied evenly across all Yukon consumers, with or without rate classes. It was recognized by some that the government has clearly stated that the present equalization and rate class regime will continue, although minor changes may be made gradually in the future.

During the consultations, energy producers and consumers alike mentioned a desire for better information on the cost of power. System costs can be identified for equipment, operation and maintenance, although these costs vary depending on rainfall, fuel prices and unforeseen factors such as a fire in a powerhouse. However, allocation of those costs among the users is not an exact science. The actual cost of delivering a kilowatt-hour of electricity to a customer is a function of many factors, including the time of day and time of the year, the customer's location and the amount of power that is being consumed. In allocating costs to the different sectors to determine power rates, the Yukon Utilities Board normally considers the annual use patterns of each customer class, its need for reliability and power quality, as well as the components of the power system that are built to supply those needs. Rates are designed to recover the fair allocation of costs among the customer classes.

By a ratio of more than two to one, questionnaire respondents supported the establishment of a Rate Stabilization Fund.

Rate stabilization

By a ratio of more than two to one, questionnaire respondents supported the establishment of a Rate Stabilization Fund that would limit bill increases to nine per cent above January, 1997 levels and freeze them at that level for four years: 52 per cent supported the fund while 23 per cent did not. Of those opposed, many expressed anger and stated they wanted no increase at all. A minority, 25 per cent, were uncertain and did not indicate either "yes" or "no." Many in this group commented they too opposed a rate increase; others needed more information. Concerns were also expressed about how the fund would be accountable to consumers. In working group meetings, no consensus was found on the best mechanism.

Respondents rated "cost of energy" and "more stable energy prices" as the two highest "very important" energy issues.

The responses to this question were consistent with answers to an earlier question in which respondents rated "cost of energy" and "more stable energy prices" as the two highest "very important" energy issues.

People needed more information

The difference between rate *stabilization* and rate *relief* seemed poorly understood. This hindered discussion about the topic and sometimes led to frustration. The Cabinet Commission on Energy's proposal for limiting the bill increase this year to nine per cent, with no increases for at least the next three years (i.e. until the end of March, 2002) prompted the following questions.

- Why nine per cent? Where are the "hard numbers" to justify this approach?
- Why only residential consumers and not commercial? What would the impact be if businesses were added? Could businesses be added in the future? Who would decide?
- Will rate stabilization end after four years? What guarantees are there that the 9-0-0-0 plan will be followed, especially if the government changes?

It was clear the lack of "hard data" led some people to give only conditional support to either rate stabilization or a rate stabilization fund. Some people felt that even if rate stabilization takes place, the "real" cost of power should appear on power bills so consumers know how the Rate Stabilization Fund affects them.

Rate relief

Background

Rate relief has been used on and off since 1987, when the Yukon Energy Corporation was formed to take over control of the assets of the federal government's Northern Canada Power Commission. The first time rate relief was used in response to the closure of the Faro mine was in 1993, when the Yukon government directed the Yukon Energy Corporation to fund a rate relief program. Between November, 1993 and December, 1996, approximately $8 million was provided to non-government customer classes to offset the impact of the mine closure by roughly one half.

In 1997, rate relief was continued by way of the government directing the Yukon Development Corporation to use its dividends from YEC to fund relief. At that time, an adjustment was made – only non-government customers using 1500 kWh or less per month would receive relief, and the amount of the subsidy declined as the 1500 kWh limit was approached. This acted as a price signal for high-end users to reduce consumption.

In December, 1997, the government directed the Yukon Development Corporation to continue rate relief until April, 1998, after which the program was terminated. The intent was to remove relief during the summer months when power bills are low, and replace the program in the fall of 1998 with whatever rate stabilization proposal resulted from the work of the Cabinet Commission on Energy.

Comments

Many of the comments made about rate stabilization actually dealt with rate relief, probably because consumers so far have only experienced rate relief – as shown on their electricity bills through "credits."

When asked what they thought of targeting rate relief only for those who need financial assistance to pay their electricity bills, close to 60 per cent of questionnaire respondents said "no." Throughout the consultation it became clear that, with few exceptions, Yukon people did not want government using electricity rates to achieve social policy or economic development objectives (for example, assisting low income families or encouraging industrial development). As well, there appeared to be a belief that rate relief can reduce incentives for electricity consumers to conserve.

Some people were concerned that rate relief would be a political tool and subject to abuse. Rate relief could work against the interests of conservation; participants in the energy policy working meetings noted that unless an appropriate consumption limit is set, high-end users would have no incentive to conserve. Some participants expressed the view that under the last program – which ended in April, 1998 – the relief granted was pretty small and not necessarily worth the effort of trying to keep consumption under 1,500 kWh each month.

Further comments:

- adjust rate relief threshold to reflect seasonal change in demand;
- consumption is not necessarily the best indicator of whether energy is being used efficiently – need some incentive for efficiency;
- businesses shouldn't be excluded from rate relief;
- utilities were concerned that base loads could be adversely affected by limited relief provisions.

RECOMMENDATIONS

Recommendation no. 19

Government should oversee the development and implementation of a comprehensive *Rate Stabilization Initiative* that will lead to long-term stability in electrical rates. [general]

Consultations have verified that rate stability is a primary concern for electricity ratepayers in the Yukon. Consumers want a long-term solution to the erratic rates rather than short-term "band-aid" type subsidies that offer no protection over the long-term.

The key to rate stability is to stabilize the costs that are being recovered from ratepayers. Proposed components of a Rate Stabilization Initiative include effective supply planning and well managed energy management programs, load diversification, longer-term horizons for rate planning, innovative forms of regulation, increased utility operational efficiencies, development of Yukon expertise, and isolation of non-industrial loads from adverse impacts caused by fluctuation in the major loads on the system.

A Rate Stabilization Fund (RSF) is one proposed component of a longer-term approach to stabilize electricity costs in the Yukon at affordable levels. A Rate Stabilization Fund provides some predictability in what consumers will have to pay and makes an attempt to determine an affordable cost level for consumers until other measures can be implemented to reduce and stabilize overall costs. A Rate Stabilization Fund would be designed to address immediate concerns of consumer cost increases over at least the next four years with ongoing reviews to ensure that consumers do not lag further behind with a longer-term objective of ultimately reaching the goal of paying a stable cost of service.

Another consideration to assist in rate stabilization is to include in the regulator's mandate a provision to ensure that temporary rate adjustments are minimized and that determinations of revenue requirements and rates are multi-year with assurances that the utilities will absorb reasonable levels of losses and gains.

Recommendation no. 20

Government should establish a Rate Stabilization Fund. [short-term]

The Rate Stabilization Fund should be designed to operate over the long term as a self-financing fund. It would smooth out the impact of all rate changes approved by the Yukon Utilities Board (YUB) which are required to reflect adjustments in utility costs or revenue recovery, in addition to smoothing bill impacts from the cancellation of the former rate relief program. It should provide consumers with the ability to predict electricity budgets with greater certainty over the long term and provide consumers with protection from adverse rate impacts while other stabilization initiatives are pursued.

To this end the fund should:

- limit electrical bill increases for non-government residential and commercial and municipal government customers in 1998 to a maximum of nine per cent above equivalent January, 1997 bills, and then freeze bills at this level at least through March 2002; for non-government residential customers, this would limit the monthly bill for 1000 kWh to $105.86 through March 2002;
- be designed to provide assistance to all non-government, non-industrial customers based on seasonal consumption limitations;
- have consumption limits designed to ensure that the Fund addresses the seasonal characteristics of electricity use and promotes conservation and the efficient use of electricity;
- be financed by YDC/YEC dividends as well as the benefits associated with industrial customers coming on – or coming back on – to the system;
- be the subject of regular comprehensive reviews, e.g., every third year of four-year programs; this should consist of a meeting of stakeholders and interested members of the public to address relevant issues; (See Recommendation no. 33.)
- be entrenched in an act of the Legislature to be introduced during the fall 1999 Legislative session; and
- be managed by the Yukon Development Corporation and reviewed by the Department of Finance.

Recommendation no. 21

Government should reaffirm its commitment to a Rate Equalization Policy. [short-term]

Residents of all Yukon communities pay the same electrical rates for the first 1000 kWh, regardless of the local cost of producing electricity. This has been Yukon government policy since 1989 and is based on the principle of fairness for basic levels of this lifeline service in all Yukon communities. Re-affirmation of this policy would be consistent with the promotion of rate stability and affordability.

Recommendation no. 22

Targeted subsidies for people on low or fixed incomes and seniors belong outside of the rate setting process and, where deemed necessary, should be provided by government directly. [short-term]

There was support at working group meetings for the principle that subsidies for low income consumers belong outside of the rate setting process. The consensus opinion from the working meetings was that this kind of social policy should be funded from general revenues rather than from utility rates and earnings. Expanded coverage by way of the Rate Stabilization Fund will assist people on low/fixed incomes and seniors but if government determines that additional relief is required for people in these circumstances, it should be provided directly to the individuals by government.

Recommendation no. 23

Non-industrial ratepayers should be isolated from the potentially detrimental impacts of supplying electricity to industrial customers. [medium-term]

Government, utilities and new large industrial customers should work together to determine an appropriate balance of investment in new generation to supply to industrial projects. The unpredictability of industrial electricity demand represents a constant challenge in the supply planning process. The challenge is to ensure that industrial energy supply does not induce rate instability for non-industrial electricity ratepayers and does not become a barrier to industrial development. Future resource development could actually contribute to electricity rate stability by incorporating flexibility provisions and a range of investment scenarios.

All parties should investigate investment strategies that minimize financial, social and environmental risks, and optimize mutual benefits for all parties including non-industrial ratepayers. This may be achieved by requiring industrial customers to invest fully, or in part, in on-site generation facilities. Alternatively, government could assume financial risk through equity involvement or guaranteed loans for infrastructure investment by the utilities. This would be especially appropriate where there were clear economic or social goals relating, for example, to jobs and industry, that could be achieved. As government is responsible to the legislature and the public for these kinds of decisions, this provides a direct accountability link.

Suggestions have been made to isolate electricity supply for industrial customers from other customers, even if a particular project is located on the Whitehorse/Aishihik/Faro (WAF) grid. Although this is a simple means of removing the impacts of industrial fluctuations on other electricity customers, this conflicts with the current state of over-supply on the WAF grid. Realistically, short-term future loads will likely be supplied through industrial customers (without grid extensions).

This dilemma of needing new industrial customer demand to match existing supply but not wanting the liability associated with industry fluctuations needs to be addressed. This could be addressed by supplying the industry base load requirements from the grid, but isolating the industry peak load requirements from the WAF grid. The peak load could be supplied from an on-site source. The benefits of isolating only peak requirements instead of entire supply requirements are dependent on the demand-supply margin on the grid and the industry load. Opportunities should be investigated on an individual industry basis and provisions incorporated in supply agreements if determined to be viable and beneficial. Regardless of what parties are investing, supply sources for peak and base loads may help to stabilize energy supply and demand on the WAF grid to the benefit of all ratepayers.

Recommendation no. 24

Utilities should ensure that Yukon ratepayers are protected from financial risk due to supplying electricity to large industrial customers. [short-term]

Consultations indicated a high degree of anger by consumers for the unpaid electricity bills of major industrial customers, mainly because the debt increases rates for other consumers. There is a clear consensus that the situation should not occur again. Government and utilities should continue to work towards minimizing the possibility of large industrial customers incurring debt from unpaid electricity bills. Utilities should not assume unwarranted risk on behalf of the Yukon ratepayers with respect to the supply of electricity to large industrial customers. This could be accomplished by:

- using the existing provision in the Electric Service Regulation (ESR) to require some form of financial security from industrial customers;
- making use of electricity supply agreements; and
- following through on the inclusion of a prepayment provision in the ESR.

Supply agreements between the utilities and industrial customers should include provisions to mitigate the risk to ratepayers. Utilities should follow standard business and utility practice in billing and collection practices.

Recommendation no. 25

Government should develop a Yukon infrastructure investment development policy to ensure that industrial energy infrastructure issues are addressed. [medium-term]

Such an initiative could encompass a number of policies and programs to encourage appropriate infrastructure development and establish an investment framework to support partnerships. The existing Yukon Industrial Support Policy (YISP) should be reviewed and incorporated into this initiative. Currently under YISP, the Yukon government can work individually with industry in flexible and creative ways to address infrastructure needs including energy supply and transportation. Projects that are

environmentally sound, economically viable, support economic development and have a positive benefit in terms of job creation, could be eligible for funding assistance. Consideration of flexibility provisions for industry could provide more direct guidance for decisions around energy infrastructure.

Recommendation no. 26

Review the Energy Infrastructure Loans for Resource Development Program (EILRDP) to ensure objectives, guidelines and project conditions support energy policy changes pertaining to large industrial customers. [medium-term]

The EILRDP is administered by the Department of Economic Development. It is currently designed to assist developers by deferring the high capital costs of building energy infrastructure in the Yukon. The program has been under-utilized and could benefit from considerations such as better collaboration with utilities and increased marketing of the program. Guidelines for industry should be developed to target energy efficient design and operations. These guidelines should be incorporated into EILRDP. An annual or bi-annual review of the program should be considered.

Recommendation no. 27

Utilities should pursue load diversification on the electrical system to help reduce the cost per kWh paid by consumers. [medium- to long-term]

This should include investigation of:

- firm load opportunities; and
- dual fuel opportunities to allow for load switching.

Utilities should be encouraged to explore opportunities to connect new customers to the grid in order to make up for lost load during mine closures. Only initiatives offering cost-effective ways to meet Yukon electricity needs should be pursued. Non-industrial ratepayers need to be protected from adverse impacts of adding firm loads particularly if other industrial loads come on line in the future.

As a first step, government and utilities could seek ways to increase the use of dual fuel systems in its own facilities. Through government initiatives the costs and benefits for load switching can be better understood.

Recommendation no. 28

Alternative rate structures and supporting initiatives to target non-industrial customers should be investigated by government. [medium-term]

Alternative rates can be designed to benefit all electricity customers as well as utilities. Appropriate rates can encourage wise energy management and help reduce demand-supply imbalances. In particular, three rate structures should be investigated:

- Interruptible Rates (linked to dual fuel systems or large customer processes);
- Seasonal Rates; and
- Time of Use Rates.

Supporting initiatives could range from educational campaigns, pilot projects to determine equipment needs and costs to incentives that encourage dual fuel commercial water heating systems. It is recognized that compatibility with other initiatives would be a necessary factor in determining new initiatives.

Recommendation no. 29

A system of incremental energy block pricing should be investigated to help promote and encourage efficient use of electricity. [medium-term]

Efficiency-oriented inclined block rates could dramatically affect electrical energy usage. While short term administration costs might be higher, long term savings could compensate for this expense.

Block pricing can be structured to support rate equalization. Prices could still be equalized for all customers at a level of monthly kWh usage that may include more than the lowest block. It is recognized that compatibility with other initiatives would be a necessary factor in determining new initiatives.

Recommendation no. 30

Commodity-based rates should be investigated and seasonal rates pursued for large industrial customers. [medium-term]

Seasonal rates for industrial customers could encourage utilization of surplus summer electricity and consequently reduce seasonal demand fluctuations on the WAF Grid. Summer and winter rates could be established on an individual customer basis, through electricity supply agreements, to ensure mutual benefits for all electricity consumers and utilities. Ratepayers should not suffer detrimental impacts of poorly designed seasonal industrial rates. There are similar opportunities for achieving benefits for all ratepayers through commodity-based rates for industry sectors. (Commodity-based rates refers to the rates that would fluctuate depending on the profitability of any industrial customer.) The costs and benefits should be evaluated.

Recommendation no. 31

Government and utilities should strengthen their roles as resource agencies and facilitators to encourage the incorporation of best energy practices into industry operations and design. [medium-term]

Government and utilities have knowledge and links to specialized expertise in the energy field. Industry can be encouraged to invest in energy efficiency through initiatives to

access this expertise and other agency programs (for example, performance contracting) and by rewarding best practices (for example, advertising good practices to the Yukon public).

Recommendation no. 32

Guidance should be provided to industry to pursue cost-effective, efficient operations, including waste heat recovery, where new fossil fuel generation is deemed appropriate to supply industrial projects. [general]

Fossil fuel generation holds some advantages: it is modular, mobile, requires relatively low capital investment and is heat-producing. The disadvantages include higher operational costs than alternative supply options, fluctuating fuel costs and environmental impacts. Fossil fuel generation may sometimes be the best alternative for projects isolated from the WAF grid or for peak generators connected to the grid. Disadvantages could be reduced through efficient equipment and operations as well as the use of waste heat. Industry should be encouraged to investigate opportunities for supplying heat to other customers (for example, nearby communities).

Recommendation no. 33

A comprehensive review of the Rate Stabilization Fund should be held every third year. [medium-term]

Government should facilitate a meeting of stakeholders and interested members of the public to address relevant issues, including:

- whether bills should continue to be frozen, or allowed to decrease or increase;
- whether an inflation factor should be introduced to allow marginal increases in bills so they keep up with inflation;
- whether the Rate Stabilization Fund should be capped.

Recommendation no. 34

Rates should gradually move towards the long-term objective of actual cost for different customer classes, as directed by the Yukon Utilities Board, without sacrificing the primary objectives of affordability and stability. [long-term]

In its 1992 Review of Cost of Service and Rate Design, the Yukon Utilities Board recommended to government that rate changes be implemented to recover 90 to 110 per cent of the utility's cost of service for each non-industrial class, with future improvements in cost of service studies to be pursued to allow a 95 to 105 per cent recovery to be attained. In 1996, the YUB directed YEC/YECL to design a Rate Shift Program that would target revenue/cost ratios for each non-industrial class in the range of 90 to 110 per cent over a ten-year period. While to date there has been little

movement towards these revenue/cost ratios, the utilities should continue towards the objective of cost-based rates while consumers are provided protection from adverse impacts by the Rate Stabilization Fund. The formulation of stable, cost-based rates will enable stakeholders to determine how best to move consumers' bills towards cost-based levels.

When determining the transition phase to cost-based bills, careful consideration should be paid to the fact that low revenue/cost ratios for residential consumers are currently funded by high revenue/cost ratios for federal and territorial government customers.

ISSUE: Electricity supply options

INTRODUCTION

As described earlier, the Yukon's electrical system suffers from relatively high levels of unpredictability in both supply (due to fluctuating water levels) and demand (due to the changing level of industrial activity). The Yukon's isolation from neighbouring jurisdictions means that supply and demand imbalances cannot be addressed by simply buying electricity from, or selling electricity to, other electrical grids.

At the present time, with the Faro mine not operating, the Yukon is experiencing a substantial surplus in electrical generation capacity. However, it would be prudent to plan for the long term by requiring government and the utilities to manage the current electricity system with an eye to future changes in supply and demand. In this context, the development of new sources of power generation and better utilization of existing resources becomes a key component of public energy policy. Modern supply planning must take into account social and environmental policies that are publicly mandated. It is important to develop a management outlook that balances its focus on risk with its focus on opportunity.

Rising energy production costs, combined with pressure from an environmentally-conscious public, have led many utilities and governments to adopt demand-side management initiatives aimed at reducing energy consumption. The Yukon government considers efficiency and conservation the cleanest electricity supply options since they work to reduce the total electricity use and can result in utilities avoiding the costs of future upgrades to transmission facilities.

One of the newer concepts in supply options is "Green Power" which is electricity generated from certified renewable energy sources with little or no environmental impact. Green Power is clean, renewable power that is generated by harnessing the energy of renewable sources such as the sun, wind and flowing rivers. Renewable energy technology taps into natural cycles and systems, turning the energy around us into usable forms. As renewable energy technology progresses, performance continues to improve and price continues to decline. There is a need to pursue innovative, market-oriented activities aimed at improving consumers' knowledge, access and use of energy efficient and sustainable renewable energy technologies. Independent Power Producers (IPPs), small electricity generating companies, can play a critical role in developing Green Power in the territory.

There is no single solution to meeting all of our future electricity needs. A series of energy resource papers were prepared for the Commission's public consultation process to promote discussion among industry, government and the community about potential energy sources for the Yukon. These resource papers provide an overview of wood, hydro, coal, oil and gas, and wind as well as alternative technologies and the factors affecting their development in the Yukon. Through planning, the Yukon can put itself into a position where it has the flexibility to meet new electrical demand with clean, affordable and locally developed energy supply options.

WHAT WE HEARD

Production of energy

Government should encourage Yukon people to reduce their use of energy.

In all consultation processes, it was clear that most Yukon people supported energy conservation.

- More than 80 per cent of the questionnaire respondents said the government should encourage Yukon people to reduce their use of energy.
- About 75 per cent considered pollution of the environment to be a very important or important issue.
- Almost 90 per cent said energy conservation was a very important or important issue.

Many Yukon people already rely on a combination of heat sources so as to minimize costs and/or increase efficiency, especially in winter. Just under half of the questionnaire respondents used more than one heat source; half that group used wood in combination with electricity, oil or propane.

Participants in the energy policy working meetings felt there should always be an awareness campaign that demonstrates practical approaches to remind and assist ratepayers to conserve energy. Such a campaign should ensure:

Energy efficiency programs should work together, not separately.

- energy efficiency programs should work together, not separately;
- consumers should be able to see a real financial advantage to investing in more efficient electrical appliances; and
- there should be some incentive for utilities to encourage energy efficiency. Presently, if demand drops (for example, due to increased efficiency in energy use) utilities suffer a reduction in revenue.

The issue of greenhouse gas emissions was raised only a few times, despite the widespread interest in pollution reflected in responses to the energy questionnaire. Participants in the working meetings expressed the view that not enough was known about Canada's and the Yukon's commitments pursuant to the *Kyoto Protocol* and flagged the issue for further action by the Yukon Utilities Board. Several survey respondents did note that not much consideration seemed to be given to greenhouse gas emissions.

Quite a few questionnaire respondents said they wanted better quality power produced, i.e. fewer outages, less spiking. One person gave up on using expensive but energy-efficient light bulbs because the surges kept breaking the fixtures.

Green Power

Half of the questionnaire respondents said they would be willing to pay more for electricity if they knew it was generated from Green Power sources.

Half of the questionnaire respondents said they would be willing to pay more for electricity if they knew it was generated from Green Power sources, for example, wind or micro-hydro, while 39 per cent would not. Of those who would:

- almost half would pay an additional $10 each month; and
- about 28 per cent would pay an extra $5;
- nearly 25 per cent would pay an extra $20; and
- less than one per cent would pay an extra $15.

Some respondents flagged Green Power as an issue when asked to add any other issues to the five listed in Section 1 of the questionnaire (pollution, conservation, stable rates, supply options, local control and costs).

People attending the energy policy working meetings, who spent a lot of time discussing Green Power, were not so optimistic. Participants doubted that when actually faced with a surcharge on their bill ratepayers would be ready to pay more for Green Power.

Sudden fluctuations in demand, which characterize the Yukon's electrical system, work against Green Power. Without stable demand, it is very difficult for any company to invest in or purchase more expensive Green Power – and Green Power is almost always more expensive even if it is kinder to the environment. However, purchasing locally generated Green Power would reduce "leakage" from the Yukon economy, with fewer dollars headed to other jurisdictions to pay for imported fossil fuels.

Role of a Green Power Fund

A Green Power Fund could be designed to encourage and assist the establishment of Green Power generation facilities in the Yukon and help provide renewable power to consumers. The proposed fund would primarily benefit off-grid communities which currently rely on diesel-generated electricity. The most gains to the environment and the economy can be made by displacing diesel

rather than hydro and currently (August, 1998) there is a hydro surplus on the WAF and Mayo grids.

Participants in the energy policy working meetings generally did not support the concept of a Green Power Fund. It was felt that the risk of a Green Power Fund turning into a politically managed fund outweighed its benefits. The following questions were raised:

- Who would manage the fund?
- How would funds be allocated?
- Couldn't the same goal be achieved by having the YUB set "Green Power rates"?

These concerns were not shared by most respondents to the questionnaire, who were simply asked if they would support a Green Power Fund. Survey comments focused on the merits and drawbacks of Green Power itself, with only a few paying attention to how the fund would operate. The same was true of the community consultations.

Alternatives to a Green Power Fund (GPF)

Some people said they would like to have more detailed information about how a GPF would operate before giving the proposal their unqualified support. Several survey respondents suggested a "carbon tax" be established, with the revenues used to support alternative energy production.

Role of Independent Power Producers

Although the questionnaire did not ask a specific question about the issue of Independent Power Producers (IPPs), some people did comment about the benefits of wind power in their reply to the Green Power Fund question, but mostly in the context of allowing individuals to generate electricity from wind for their own use rather than as a supply source for entire communities and/or the Whitehorse Aishihik Faro (WAF) grid.

Opportunities and constraints affecting IPPs were discussed at length during energy policy working meetings. The participants, including several individuals and businesses involved in IPP, were of the view that there is potential for IPPs to displace diesel-generated electricity with Green Power, but that there are few if any financial or environmental benefits to displacing hydro power. Participants suggested one use for a Green Power Fund could be to make up the difference between the cost of diesel power and the Green Power method used.

Implications of using Independent Power Producers

People involved in the energy policy working meetings noted that when the Faro mine is down, hydro generation on the WAF grid is in a surplus position during the summer and falls just short of demand requirements in the winter. When the mine is up, the extra power demanded far exceeds the one or two megawatt plants most IPPs would build. Unless IPPs were established as an integral component of base load supply, it is not likely that the utilities would buy power from them for the WAF grid when there is a surplus of hydroelectric capacity.

The IPP representatives wanted a "take or pay" system, in which the utilities would purchase all the power the IPPs generate, whether or not it is needed to supply system requirements. The purchase price for IPP-power would take into account the actual cost of generation, in order to address perceived difficulties and compatibility with rate equalization and rate stabilization. IPPs justified the "take or pay" system by suggesting they are inherently more efficient than the utilities.

Look at using bio-gas, especially in Whitehorse with its large sewage lagoons and landfill site.

Other sources of energy

Most participants in the final round of consultation cited the obvious alternate supply options: wind, wood, solar, natural gas and micro-hydro. The following suggestions were made by a few people:

- look at using bio-gas, especially in Whitehorse with its large sewage lagoons and landfill site;
- investigate co-generation using existing facilities;
- promote the use of waste oil in CSA-approved burners;
- tie into B.C. Hydro or Alaska power grid.

Promote the use of waste oil in CSA-approved burners.

In the questionnaire responses, several participants felt coal – especially since it is available in the Yukon – should be given more consideration. They noted that while coal isn't as "green" as the other options, it would reduce leakage from the economy and might be cheaper than diesel.

There was considerable interest by respondents in developing more wind generation plants. Wind generation seemed to be favoured especially if operated at the grassroots, for example, a wind generator in the backyard.

RECOMMENDATIONS

Recommendation no. 35

Governments at all levels should assume a renewed role in energy planning, with sustainability being the guiding principle in public policy governing all energy forms and sectors. [general]

Clarification is needed on the roles and responsibilities of energy stakeholders and intergovernmental co-ordination in the context of energy supply planning. In this context, the focus of supply planning must shift from lowest-cost considerations alone to how it relates to other aspects of energy planning to meet the goals of sustainable development and environmental preservation.

Consultations have indicated that there appears to be support for control, diversification and planning of local electrical production and distribution. Any local energy resource development will provide jobs for Yukoners during both the development or construction phase as well as during operation. Such developments will contribute in a positive manner to the overall health of the Yukon economy, will assure energy supplies for individuals and industry, will diversify the economy and will reduce reliance on imported petroleum products.

Appropriateness of scale and flexibility of infrastructure (to adapt to boom/bust needs) should be considered central elements of production efficiency.

Government should ensure that all infrastructure investment is made only after full consideration of alternate uses of available funding.

This recommendation ties in with Canada's recent commitment to reduce greenhouse gas emissions by reducing the Yukon's reliance on diesel generation. The biggest potential for displacing diesel generation would be in communities that now exclusively use diesel to generate electricity.

Promoting sustainable energy resources reduces reliance on imported fossil fuels and supports an industry that will supply safe energy for future generations. It provides an incentive for utilities and others to explore new avenues for electricity supply. By diversifying electricity supply, utilities can gain valuable experience with the technologies of the future. Green resources are also good sources of jobs and income because they rely on local labour, land and resources.

Non-utility generation should be encouraged through sponsored demonstration projects, through distributed information, and through consumer incentives/ disincentives.

There is ongoing need to provide information to the public on alternative local energy sources and their potential for use in the Yukon, based on current and developing technology.

While electricity is only one of several sources of energy, it holds a special place as the source of energy over which Yukoners have the most control. Most of our electricity is generated from our own hydro-electric resources, and virtually all of our hydro-electric assets are owned publicly through the Yukon Energy Corporation. As such, the cost of electricity, how it is generated and regulated, and how our electrical utilities are structured and operated, all strike a chord with Yukoners. In the past several years such issues have had a cumulative effect. Yukon people have expressed frustration and some are cynical; they want to see electricity issues resolved in an open and accountable way.

Recommendation no. 36

Develop a Yukon-wide greenhouse gas reduction strategy. [medium- to long-term]

In order to have a clearer understanding of our local greenhouse gas emissions from all resource activities, a more thorough analysis, in partnership with national agencies, must be carried out. Analysis of greenhouse gas emissions should be included in all energy end use (and production/ distribution) analysis and supply planning processes. Such analysis should contribute to the development of a greenhouse gas reduction strategy and would enable the Yukon to take a stronger role in international, national and regional efforts to reduce greenhouse gas emissions in a fair and equitable manner.

A greenhouse gas reduction strategy should target energy end use in all sectors including residential, commercial and transportation. The development of this strategy should be linked with public outreach endeavours for climate change.

Realistic goals should be set, taking into consideration the practicalities of implementing emission reduction initiatives in communities that now exclusively use diesel to generate electricity. The focus should be on finding renewable or cleaner substitutes for diesel-fuelled generation, or on making more optimal use out of diesel generation by harnessing the waste heat from diesel generators for heating purposes which reduce our use of fossil fuels.

Recommendation no. 37

Establish a Green Power Initiative to encourage "green" alternatives (like wind, solar, or small hydro power) which reduce greenhouse gas and other emissions. [short-term]

A Green Power Initiative (GPI), would encourage and assist the establishment of Green Power generation facilities in the Yukon and facilitate the provision of this power to Yukon consumers. It could be funded by revenues from Green Power rates, voluntary contributions, donations from non-governmental organizations, individuals and businesses, and revenues from industry or other governments from emissions trading.

One way to encourage more consumers to contribute to the funding of a Green Power Initiative is to add personal, private value to the environmental benefits that Green

Power provides. Consumers should be made aware of the impact their contributions can make to establishing a more environmentally-friendly energy supply and the positive impact this will have in their own lives as well as the lives of everyone in their community.

The government may want to begin by emphasizing that Green Power is a premium offering, not a social program. It must be clear to consumers that the expected higher costs of Green Power would need to be recovered from users of Green Power rather than from all consumers. Green Power should also be as tangible as possible so that customers have a better sense of what their money is buying. Some suggested ways to make Green Power tangible:

- offer a premium rate for renewably generated electricity rather than asking for donations;
- offer renewable electricity in blocks (i.e., individuals can purchase 25 per cent, 50 per cent, 75 per cent or 100 per cent of their electricity from renewables);
- offer price stability on the renewables component of electricity purchases;
- membership kits which include stickers, decals, promotional and/or informational material and discounts on environmentally friendly products;
- public acknowledgement of participating businesses;
- compatibility with federal program subsidies.

A Green Power Initiative would expand consumer choice and provide a way to raise environmental awareness and accelerate market adoption of cleaner energy technologies.

Such an initiative should ensure that the risk of "free riders" on the environmental benefits is minimized by maximizing the incentives to buy green and increase the demand for renewable energy. ("Free riders" is a term used to describe parties who enjoy the environmental benefits without contributing to the funding of a Green Power Initiative.)

The mechanics of how an Independent Power Producer gains access to the grid and the prices that will be paid for non-utility generation should be established through consultation. The utilities should be encouraged to be more amenable to alternative sources and IPP options as an important step towards a locally responsive energy development strategy.

Recommendation no. 38

Plan and implement at least one alternative energy pilot project with assistance from the Green Power Initiative, within a target of two to three years, preferably with IPP participation. [short- to medium-term]

Opportunities for small scale renewable energy projects have been identified throughout the Yukon. Project development could be facilitated through a Green Power Initiative and by identifying priority projects. Funding support should be sought through a range of sources including the federal government's Early Action Fund to address climate change. Project selection and development requires input by IPPs as well as consumers who will be using – and paying for – the energy.

Energy research and development is increasingly being used as a tool for economic development in many jurisdictions outside of the Yukon. Energy pilot projects should be considered as an opportunity for stakeholders to come to a better understanding of what the demand is for energy research and development and what the government's role should be in this area. Consideration should be given to the development of an energy research and development initiative especially with respect to funding sources.

Recommendation no. 39

Establish a set of social, environmental, economic and technical criteria by which proposed supply options should be evaluated. [medium-term]

Benefit and risk analysis – taking into account economic, environmental, social and security benefits and risks and costs – is an important element in energy project decision making. The inclusion of "side-effects" should become a key component of development assessment and costing processes. Adoption of Multiple Accounts Evaluation (MAE) should be considered.

MAE is a method for comparing economic, environmental and social factors without the need to convert everything to a dollar value which tends to marginalize the other factors. A typical evaluation includes the same information contained in simple financial analyses for several project options. Beyond that, it involves documenting and assessing the broader implications (for example, job creation, business development, economic leakage, changes to wildlife and habitat, greenhouse gas emissions, skills development, and changes to community structure). Similar to financial analysis, MAE is relatively transparent. In contrast to cost-benefit analyses, where the end product is a single number, the end product of a MAE evaluation is a matrix that guides decision-makers by showing the gains and losses that accompany each project.

MAE is an assessment tool that can be used to guide any decision-making process, from a family choosing a home to a DAP office making a recommendation on a new mining project.

In addition to MAE, development of energy supply options should be based on careful consideration of the following principles:

1. the high cost, high risk, high debt projects should be avoided without major customers to pay for them;
2. the development should be a tool of economic growth, creating employment opportunities for Yukon people;
3. the development must be environmentally sustainable; and
4. the development should provide opportunities for pubic participation policy development.

Recommendation no. 40

Government should investigate the development of a Yukon-wide emissions trading model to provide a "financial" incentive for investment in and development of Green Power. [medium- to long-term]

Emissions trading is a developing mechanism intended to support better choices around energy supply and use. The costs and benefits of emissions trading have not yet been fully realized. (Emissions trading allows one country, province or business to buy or share reduced greenhouse gas emissions. A typical emission reduction trade would see a buyer with high cost options for emission reductions purchase a lower cost option from a seller and enter into a contract to transfer ownership of the emission reduction.) A Yukon model could build on the two national models as well as existing private initiatives and target new industry and include waste heat recovery from diesel generators. Emissions trading has potential to help resolve local issues around Green Power investment as well as industry investment in new generation.

Recommendation no. 41

Locally supplied Green Power should be given priority when assessing electricity supply requirements for isolated (not connected to WAF Grid) industrial customers. [general]

Incentives to encourage industry to invest in Green Power should be part of a Green Power Initiative. These incentives could be developed through mechanisms such as emissions trading. Opportunities through existing federal tax incentives such as the Canadian Renewable and Conservation Expenses (CRCE) should be conveyed to industry. Benefits and costs to neighbouring communities should be explored in evaluating new energy supply, regardless of initial investment partners.

Recommendation no. 42

Encourage co-operation between utilities, industry, IPPs and public stakeholders in energy supply planning. [general]

Utilities should be required to provide regular updates of their strategic plans, easy access to understandable information on load forecasts, supply requirements, energy costs, technology and alternatives.

An energy data base or information system should be established in order to provide consumers and businesses with access to information on energy resources and options as well as on energy use, local alternatives, conservation and efficiency.

The utilities should be encouraged to take a more consultative approach on their strategic planning, and bring IPPs and public stakeholders inside their planning processes. This would allow IPPs to identify opportunities for independent power projects while also keeping the public informed.

Recommendation no. 43

New investment in publicly funded energy infrastructure projects should adhere to general principles of sustainability and efficient use of resources. [general]

There are opportunities to use a variety of potential funding partners in developing infrastructure. Co-operation is needed with First Nation governments, community governments and the federal government so that new investments in publicly funded energy infrastructure projects adhere to general principles of sustainability and efficient use of resources. A co-ordinated approach to development would ensure that principles of sustainability and efficient use of resources are maintained.

This could be implemented through the Yukon government seeking development agreements with other orders of government.

Recommendation no. 44

Government should encourage utilities to adhere to broad and specific community energy management (CEM) principles in all their activities. [general]

Energy savings and greenhouse gas emissions savings through reasonable efficiency measures should be identified and quantified in all electricity supply planning analyses. A more inclusive model for supply planning processes and management of Yukon's energy resources should be developed. This model should be fair to all participants and include a mechanism for stakeholders to provide input and have easy access to the process. Giving value to waste heat from diesel generation and encouraging standards of operation for distributing and using waste heat are important elements to consider.

Recommendation no. 45

Electricity bills should provide information on each customer's historic electricity consumption to create more awareness about electricity use and encourage conservation, efficiency and economy. [medium-term]

Utilities have indicated that this recommendation will require considerable work on their billing systems. The recovery of costs to make these changes will need to be taken into consideration. It would be useful to review current efforts of other jurisdictions in this regard.

Recommendation no. 46

Government should continue its efforts to renegotiate with Canada the flexible term note on YEC's assets to eliminate the economic disincentive it creates against using surplus hydro electricity to displace fuel oil. [general]

The Flexible Term Note was developed during negotiations of the transfer of Yukon's energy infrastructure from Northern Canada Power Commission (NCPC) to the Yukon Energy Corporation (YEC). The note was created to protect ratepayers from an undue level of risk as a result of the Faro Mine shutting down. Threshold levels were originally set to suspend principal and interest payments if power sales on the WAF system are less than specified amounts.

However, the structure of the note creates an economic disincentive to incorporate a secondary sales program during low demand periods. Revisions to the Flexible Term Note could permit the development of a secondary sales program to benefit Yukoners, YEC and with minimum impact on Canada.

Recommendation no. 47

Within the next 10 years, examine all communities that exclusively use diesel to generate electricity and identify opportunities to:

- **displace diesel generation with renewable, green alternatives; and/or**
- **implement co-generation to make optimal use of diesel's waste heat energy. [long-term]**

The biggest potential for displacing diesel generation is in communities that now use diesel exclusively to generate electricity. The intent of this recommendation is to determine the long-term viability and cost effectiveness of generating electricity from local renewable energy sources and to encourage a continuing market for renewable energy.

This should be viewed from a long-term perspective as one of many efforts to replace the reliance on diesel generation in some communities with more green power for Yukon people over time. This initiative supports Canada's recent commitment to reduce

greenhouse gas emissions to a level six percent below 1990 levels by the year 2012 at the international climate change negotiations held in December, 1997, in Kyoto, Japan.

Sources of renewable or Green Power would be most effective at various times during the year (wind in winter, run-of-river hydro in summer), so the benefits of displacing other sources of generation would vary depending on what is being displaced and when.

Cogeneration refers to the combined production of electricity and useful heat. Cogeneration facilities use significantly less fuel to produce electricity and thermal energy than would be needed to make the two separately. Opportunities for district heating systems and the use of waste heat from existing diesel generators for space and water heating should be identified and developed.

Examination of these issues could be the subject of a pilot project, facilitated through a Green Power Initiative.

Recommendation no. 48

Grid extensions and inter-ties should be pursued only if such projects would keep electrical rates affordable for Yukon electricity consumers. [long-term]

The idea of extending the WAF grid within the Yukon region, or connecting the Yukon with a larger grid in another jurisdiction (such as B.C. or Alberta), has been suggested as a possible answer to the Yukon's problems with electrical supply and demand imbalance. Options which have been discussed include connecting the WAF grid to Mayo and Dawson so that surplus power generated at the Mayo dam can be used to address shortages elsewhere on the system, and to replace Dawson's diesel generators with hydro power. It has been suggested that Atlin be connected to the WAF grid to create a market for the surplus of hydro electricity that exists in the Yukon when the Faro mine is down. And connection to a large Outside grid would allow the Yukon to sell electricity when it has a surplus, and buy electricity when needed to avoid diesel use; as well, interconnection would help to stabilize Yukon power rates.

However, grid extensions involve significant capital costs. Government has a role to protect Yukon ratepayers from exposure to increased risk as a result of such expensive projects. The primary way to control risk would be through the provision of sizeable funding support from a third party, for example, the federal government and opportunities for cost-sharing such projects should be pursued. In addition to the prerequisite of being financially viable, such a project would have to be environmentally sustainable.

Before undertaking extensions, the potential for using waste heat in communities where connection to the grid is being considered should be evaluated.

ISSUE: Regulatory processes

INTRODUCTION

For much of this century in Canada, the most economically efficient way to offer basic utility services has been for just one entity to offer that service within a geographical area. Such services have included electrical power, telecommunications and natural gas transmission and distribution. (Municipalities tend to control sewer and water systems and operate them on a non-profit basis.)

Such situations have been described as "natural monopolies". Providing these services usually requires a large capital investment, such as hydro-electric facilities and transmission lines, which makes it uneconomical and impractical to have two or more competitors duplicating the infrastructure needed to provide the service. In return for allowing natural monopolies to operate, governments place these entities under the control of independent tribunals which regulate, among other things, the rates charged to their customers.

The key purpose of rate regulation is to help ensure that consumers receive a reliable service at a reasonable cost. Regulation is intended to balance the interests of both customers and investors. In doing so, regulatory authorities face an obvious conflict – customers want to pay less while the regulated entity wants to earn more. To resolve this conflict, regulators attempt to determine rates that are just and reasonable. The rates must be fair to both customers and investors. What is "fair" is usually determined with reference to the costs the entity incurs to provide service.

Determining fair rates can be time consuming, confrontational and legalistic. In the Yukon, the Yukon Utilities Board holds public hearings, usually every two years, to determine whether the rates that the Yukon Energy Corporation and the Yukon Electrical Company Limited want to charge are fair. A clear drawback of this process is that it can be expensive; as it is "quasi-judicial", it operates formally like a court with utilities and occasionally stakeholders represented by lawyers. The cost of this process is ultimately absorbed by electrical consumers, which has led the issue of electrical regulation to be a public policy issue in the Yukon for several years. It is felt by some that the cost of electricity regulation is too high, and that the quasi-judicial, adversarial approach to regulating the Yukon electricity sector may not be operating in the most effective way. Some feel that alternate approaches to regulation should be explored.

The current approach

The form of regulation used in the territory for the Yukon Energy Corporation and Yukon Electrical Company Limited is the "rate of return" method. Under rate of return regulation, rates are set which allow the regulated utility the opportunity to recover its estimated costs including a fair return on its investment.

The primary advantage of the return on rate method is that the regulated entity is unlikely to earn significantly more or less than a fair return. However, this also means

there is little incentive for efficiency because any efficiencies are lost through lower rates at the next rate hearing.

Regulatory principles

Regulatory authorities must review and set rates in accordance with their empowering legislation. However, as is the case in the Yukon with the *Public Utilities Act*, that legislation seldom contains specific guidance about how rates are set – often it states little more than rates must be just and reasonable.

As a result, regulatory authorities frequently refer to established regulatory principles to guide their judgement in determining what is just and reasonable in the particular case under review. However, the regulators are not required to apply any specific principle.

At the heart of rate of return regulation is the cost of service standard (sometimes called the revenue requirement standard). Under this standard, a utility is permitted to charge rates that allow it the opportunity to recover its costs for regulated operations, including a fair rate of return on its investment devoted to regulated operations.

An underlying principle of regulation is that customers in a given period should only pay the costs that are necessary to provide them services in that period. They should not have to pay any costs incurred to provide services to customers in another period. If costs cannot be recovered when they are incurred, it is generally best to recover them in a period as close as possible to the one in which they were incurred. Future economic benefit must be proven before an expenditure can be reported as an asset rather than an expense.

The matching principle requires that a regulated utility's costs be matched to the period that benefits from the costs being incurred, and should be recovered from customers in that period. This principle determines when costs will be recovered and therefore has a direct effect on revenues.

The rate stability and predictability principle requires rates to remain stable and predictable, at least to the extent practical. This principle may justify smoothing out increases to avoid any sharp rate climbs. This principle may require costs to be collected from customers in periods other than those for which the costs were incurred. Despite the conflict with other regulatory principles, it is justified because it recognizes the problems customers can face in adjusting to significant rate fluctuations.

Under the used or required to be used standard, customers should only pay for the cost of those assets that are either used or required to be used to provide them with the service. In the electric power industry, this includes reserve capacity and recognizes the discrete nature of economically-sized capital additions.

Regulators must ensure that customers are charged only for prudently incurred costs. This recognizes the fact that regulated utilities have a responsibility to manage themselves in a prudent manner. Generally, it is assumed that management has acted prudently, unless there is evidence to the contrary.

Regulatory innovations

In recent years, there has been a wave of electricity sector reforms in other jurisdictions. The following innovations were presented to the public in discussion documents for consideration.

Deregulation of competitive parts of the industry

Allowing competition for the generation of electricity while still regulating the monopoly transmission and distribution wires (for example, in the United States and southern Canadian jurisdictions).

Innovations to streamline the regulatory process

Replacing prolonged, quasi-judicial hearing processes for setting rates with negotiations between interested parties (for example, the Yukon's Negotiated Settlement during the 1996-1997 General Rate Application);

Incentive regulation

Implementing regulatory mechanisms that share the cost savings achieved by utility management between utility shareholders and utility customers, and thereby narrowing the scope of regulatory scrutiny. However, this would also require enhanced measures to ensure that the utilities remain accountable to their ratepayers.

Integrated resource planning

Involving the public in the utility planning exercise in order to reduce the risk of advancing projects that will ultimately not be approved.

WHAT WE HEARD

The complexity of the existing regulatory process made focused discussion on this issue difficult. Even at the energy policy working meetings, where many people present were quite familiar with the operations of the Yukon Utilities Board (YUB), misunderstandings about concepts or practices were evident. The questionnaire respondents focused on bottom-line issues:

- why should the utilities have a guaranteed and high rate of return when nobody else does, especially when the economy here is in a downturn?
- the current process is unsatisfactory because it is incomprehensible, slow and not accountable to ratepayers even although the YUB is supposed to be acting on their behalf.
- the YUB is "too political."

Why should the utilities have a guaranteed and high rate of return when nobody else does, especially when the economy here is in a downturn?

- people who want to intervene in YUB hearings have to do so at considerable personal cost; that means only the "big players" like the government and the utilities really participate in what should be a public process.

It was recognized that the costs of the regulatory process are borne by ratepayers, although most comments dealt mainly with the complexity of the *status quo*. More than 60 per cent of questionnaire respondents supported streamlining the process if it led to reduced costs while maintaining adequate accountability. However, more than 30 per cent did not answer this question.

Findings from the energy policy working meetings

Regulation was discussed in detail over the course of several energy policy working meetings.

The YUB should be encouraged to seek out ways and means to streamline the regulatory process to make it as cost-effective as possible without compromising the greater public interest.

Participants generally felt the present regulatory system is too expensive and too complicated. The YUB should be encouraged to seek out ways and means to streamline the regulatory process to make it as cost-effective as possible without compromising the greater public interest. Continued use of pre-hearing conferences, settlement agreements, and written submissions, together with electronic filing and alternative approaches to regulations, etc., should all be considered.

Meeting participants noted that the public questions the YUB's ability to regulate, especially free of political interference and that politics should be left out of energy. The YUB process was also discussed and it was felt that the process should be used for the utilities and consumers, not to help mines start up or advance a social development agenda. In addition, it was suggested that the skill requirements for Board members should be expanded.

Participants indicated that lack of incentives for Utilities to pursue demand side management should be addressed at the next General Rate Application (GRA) hearing. As well, it was suggested that the "real" cost of power should appear on consumers' power bills, along with the price the consumer pays, to promote conservation and increase accountability.

The YUB should use plain language in its work.

With respect to the *Public Utilities Act*, meeting participants felt that a formal review of the Act should be considered, along with a review of current practices in other jurisdictions. The opinion was also expressed that the YUB should use plain language in its work

and that existing rules for compensating applicants and intervenors – especially consumers – should be revised to better cover reasonable costs while preventing abuses.

Meeting participants also suggested that the *Public Utilities Act* should be amended to remove the mandatory requirement on utilities to provide service, unless there is a legal reason not to do so. This would possibly prevent another Anvil Range incident – big users would have to pay in advance, for example, or not get service.

As well, several people who attended working meetings noted that:

- the YUB now regulates on the basis of cost-of-service, even though present accounting systems do not take social and environmental costs into consideration; an alternative approach would be performance-based regulation;
- reducing the involvement of the YUB in regulation would reduce the opportunities available to the public to scrutinize the activities of the electricity utilities;
- there is considerable merit in continuing to use a Negotiated Settlement process during YUB rate hearings, rather than relying exclusively on the traditional adversarial process.

RECOMMENDATIONS

Recommendation no. 49

The Yukon Utilities Board should ensure that the principles of fairness, affordability and recognition for all parties with an interest in the process are fully addressed in a review of its Rules of Practice. [short-term]

The Yukon Utilities Board (YUB) relies upon intervention from interested parties representing different classes of customers of a utility to test the various aspects of the applicant's rate case. The YUB looks for constructive and relevant views on the regulated parts of a utility's operations to help the Board discharge its basic mandate to fix just and reasonable rates for all customers.

During public and working meeting consultations on the regulatory process, many parties felt that the existing process did not fairly balance the interests of consumers and utilities. Some felt that the quasi-judicial, adversarial approach to public hearings is often not easily understood by the public. The view was also expressed that the public process was getting too far away from the public it is designed to accommodate.

In addition, the Commission invited energy stakeholders to comment on how the YUB process might be improved and, following a meeting with respondents, the Commission forwarded preliminary recommendations which focused on fairness, affordability and recognition with respect to intervenors. The YUB initiative calling for suggestions on changes to its Rules of Practice provided an opportunity for these preliminary recommendations to be conveyed during a meeting with the Energy Commissioner and the YUB.

Recommendation no. 50

Government should encourage further streamlining of the regulatory process to make it as cost effective as possible, through such means as extending the periods between full GRAs, while ensuring effective measures for accountability and protection of the greater public interest. [short-term]

As part of its evaluation, government should include consideration of the feasibility of longer periods between full GRA reviews with strengthened provisions for interim reviews, incentive or performance-based regulation, electronic regulatory filing, and coordinated/simultaneous filings by the Yukon Energy Corporation and the Yukon Electrical Company Limited.

Incentive regulation involves sharing cost savings achieved by utility management between utility shareholders and utility customers. This reduces the need for vigorous utility overview, and would allow for less frequent rate applications and rate hearings. It would allow a move to a longer period between GRAs which would result in considerable savings for ratepayers, without compromising accountability.

Additional accountability measures that should be considered when planning any move to longer periods between GRAs include the following.

1) *Providing opportunities for education*: ensure that intervenors and the general public have opportunities to learn about the operation and regulation of electrical utilities so they are better equipped to understand the complexities of the electrical business and be informed, effective, and efficient industry "watchdogs" and assist the YUB when required.

2) *Improving access to information*: improve the day-to-day availability of relevant information on the operations and finances of the utilities, in an easily accessible and understandable form. For example, rules for intervenors and flowcharts outlining the regulatory process should be presented clearly and understandably on a website that is updated regularly.

Recommendation no. 51

Before the next General Rate Application hearing, identify some interim solutions that will improve intervenors' access to relevant information. [short-term]

This could include holding a government sponsored workshop for intervenors to help them prepare for the GRA and to assist them in accessing and interpreting utility information. There is also a need to clarify for intervenors how the *Access to Information and Protection of Privacy Act* applies with respect to the Yukon Utilities Board, Yukon Development Corporation and Yukon Energy Corporation.

Recommendation no. 52

Release to the public the results of government's review of the Regulations under the *Public Utilities Act*, which will identify any inconsistencies between the Regulations and the Act. [short-term]

During consultations, concerns were raised about the complexity, cost and public accountability of the regulatory process to ratepayers. A review of the Regulations would support the recommendation to streamline the regulatory process and provide an opportunity to identify and address areas that could be improved. Linked to a review of Regulations, a formal review of the Act is recommended below as a medium term activity.

The Department of Economic Development has been directed by Cabinet to undertake a review of the *Public Utilities Act* and the Rate Directives Order-in-Council (OIC) to identify any inconsistencies and recommend changes to Cabinet as necessary to eliminate inconsistencies. This direction originated with the YUB's request to review parts of the rate directives OIC in light of its perceived restriction from reviewing the rate of return between hearings.

While the rate directives OIC has been changed to address the YUB's concerns, it has been suggested that a review of the entire OIC is warranted. The review will ensure the regulations provide for effective, relevant and cost effective regulation of utilities in the Yukon.

While the review is designed to be consultative in nature, it is important to ensure that the policy making process remains as transparent as possible to the public.

Recommendation no. 53

A formal review of the *Public Utilities Act* should be conducted to determine whether amendments could be made to support improvements to the regulatory process and utility operation. [medium-term]

Participants in the energy policy working meetings expressed the view that the *Public Utilities Act* may require some amendments in order to support changes to the regulatory process and its underlying philosophy. Among issues to be considered in a review were the following:

- the relationship between the YUB and government;
- strengthening the ability of the YUB to deal with complaints;
- review the requirement that any customer who requests electricity must be supplied;
- de-regulation of power production (allow competition).

ISSUE: Accountability, ownership and corporate structure

INTRODUCTION

Accountability, ownership and corporate structure in the Yukon's electrical sector primarily relate to the Yukon's publicly owned utility, the Yukon Energy Corporation (YEC).

The YEC is a rate-based, self-financing, regulated utility company which owns the major hydro and diesel generating plants in the territory. While it is incorporated under the *Business Corporations Act* as a private Corporation, it is a wholly owned subsidiary of the Yukon Development Corporation (YDC), which is a government-owned Crown corporation.

In the past, YEC contracted out the day-to-day management of its power generating assets to the Yukon Electrical Company Limited, which has expertise in this area and corporate support through its parent companies Alberta Power and Canadian Utilities. However, this year, YEC took over direct management of its assets, which was a significant change for YEC. How this change has or should affect the question of public accountability has yet to be determined.

The YDC was originally mandated to manage the YEC and to re-invest energy profits into resource development, employment creation and business opportunities. In 1993, this broad mandate was restricted by Order in Council to "energy related activities."

YDC is managed on a day-to-day basis by a president and CEO who reports to a board of directors which is appointed by Cabinet. The chair of the board has a reporting relationship with the cabinet minister who has been assigned responsibility for the YDC. YDC's president/CEO, its board members, and its board chair currently also fulfil these same positions for YEC. The rationale for this arrangement is the fact that YDC's major activity is the operation of YEC. The amount of YDC activity not directly related to YEC has not in the past justified a separate president/CEO and board.

Some Yukon people feel that YEC is not accountable enough to the Yukon public. However, YEC is faced with many levels of accountability but these are not always neatly compatible. YEC is accountable to its board of directors (board appointed by the board of the Yukon Development Corporation (YDC) whose members are appointed by government). YEC is publicly accountable to both the Yukon Utilities Board and the Yukon Territorial Water Board as regulators; it is accountable through YDC to the responsible minister and, in turn, the minister is accountable to the Legislature. This multiplicity of accountability is confusing and adds to questions about accountability. A common question is: *"who really runs YEC, the government, the minister, the board of directors, or the president and CEO?"*

Another view is that the management and direction of YEC is highly politicized. Some feel that politics should be taken out of the operation of YEC, that it should operate at arms-length from government. And yet, there is a strong voice for the government to *"do something"* whenever electrical rates rise. The public also expects government to fulfil specific public commitments to provide direction to YEC or YDC when required.

While there are many issues around the governance of YEC that ignite controversy and debate, it seems clear that some fundamental principles should apply, including:

- a clear policy direction for YEC's role;
- performance standards for YEC's operations;
- a clear articulation of the relationship between the YEC, YDC and the government;
- assurance that YEC is effectively managed;
- assurance that YEC operates in a business-like fashion; and
- public accountability that is clear, effective and understood.

Clarity of roles, government direction and accountability are essential to the governance of a publicly owned corporation such as YEC.

WHAT WE HEARD

Role of Yukon Development Corporation

The role of the Yukon Development Corporation was examined in some depth during the energy policy working meetings. Both merit and disadvantages in the existing ownership structure were identified; however, no consensus was found on what action, if any, should be taken.

Currently, the Yukon Development Corporation board consists of the same people on the Yukon Energy Corporation board, and almost all of YDC's activities involve YEC. The relationship can be confusing and may not serve the interests of Yukon people, who own both corporations through the government – the sole shareholder in YDC. Although the energy questionnaire did not raise this issue, it was mentioned several times by respondents. Lack of information or public understanding about the YDC/YEC relationship prompted concern about too much bureaucracy in the running of the publicly-owned electric utility.

There was a suggestion that the issue of privatizing YEC be considered, but there was no significant support for this position.

Alternatives to YDC/YEC

The merits and disadvantages of allowing municipalities and/or First Nations to control energy infrastructure were discussed by people at the energy policy working meetings. The Association for Yukon Communities is in favour of municipalities purchasing existing generating facilities in their communities and/or distributing power since this is an effective way to ensure local control. As well, a few survey respondents noted municipal and/or First Nation ownership as a possibility. This issue was not raised in the community consultations.

The AYC also would like municipalities to be able to "franchise" power service again; franchising would let a municipality obtain the best deal possible for power supply and distribution because utilities and IPPs would be bidding against each other for the right to provide service to municipal residents.

Working meeting participants were somewhat sceptical of the merits of splitting up an already small utility. The few economies of scale now present would be lost, and rate equalization between Yukon communities would be difficult if not impossible. Risk would increase substantially for the smaller utilities, and co-ordinated long-term planning could be compromised.

The same was true of franchising. One working group member likened the practise to a hidden tax, since any payments made by the utility to the municipality would be recouped from ratepayers.

Long-term planning

A few questionnaire respondents said that more planning needs to take place; the suddenness of rate hikes was cited as lack of planning. Comments generally indicated that rates would be lower, with fewer changes, if better planning took place.

A more positive view of the effectiveness of the planning being done by the government, YEC and YECL was expressed at the energy policy working meetings. It was felt that the government should act sooner rather than later, however, in setting a target for greenhouse gas emissions reductions in support of the *Kyoto Protocol*.

It was also noted during the working meetings that political will – and not market forces – is often needed to bring about significant

change. This is consistent with the public policy role any good government should assume. The working group felt that political interference is to the detriment of long-term infrastructure planning. As governments change, commitment to long-term undertakings such as Green Power fade away or reappear.

RECOMMENDATIONS

Recommendation no. 54

Government should clarify the accountability relationships in the electricity sector in the Yukon. [short-term]

The public, intervenors, regulators and even the electrical utilities and government appear to be unclear about precisely who in the electricity industry is accountable, what they are accountable for, and to whom they are accountable. Further, the public wants to know who is in charge, who makes decisions, the role of the Yukon government and who should shoulder the blame when mistakes are made. Given YEC's move to direct management, these questions are particularly relevant at this time, which creates an opportunity to review and clarify the situation.

Recommendation no. 55

The Yukon Development Corporation and the Yukon Energy Corporation should be more accountable to the Yukon public. This could be achieved by:

- **having the chair of the YDC/YEC boards appear annually before the Yukon Legislature;**
- **having YDC/YEC publish an annual "Shareholders Report" which explains the strategic plans as well as the operations and finances of the YDC and YEC in clear, plain language;**
- **holding an annual "Shareholders Meeting" on a set date each year. [medium-term]**

YDC and YEC have to become more directly accountable to their shareholders, the Yukon people as represented by YDC's only shareholder – the Yukon government. The intent of this recommendation is to ensure Yukon people are provided with information on the operations of YDC and YEC, including the publication of a "Shareholders Report" that is prepared with the general public in mind as the audience. The report should be made as accessible as possible by including posting it on an Internet website.

Recommendation no. 56

Review the structure and legislative mandate of the Yukon Development Corporation. [long-term]

Many participants in the consultation process questioned the need to have both YDC and YEC when presently the primary purpose of YDC is to run YEC. While the working meetings did not result in a consensus position on the future of YDC, there was agreement that the present system was not accountable enough and that the need to continue having both YDC and YEC should be re-examined.

This review could include entrenching in the *Yukon Development Act* the OIC which restricts YDC to energy related activities (OIC 1993/107).

CONCLUSION

The keystone of the Energy Commission's work has been public and stakeholder consultation. The recommendations in this report are built upon input received during public meetings and technical working meetings, and from discussions with interested individuals and groups, as well as from responses to the energy options questionnaire. A sincere effort has been made to present recommendations that reflect what was heard during consultations and will result in a long-term responsible approach to the provision and use of energy in the Yukon.

This report is submitted to the Yukon government for its consideration and response. The government has stated its commitment to meeting the challenges of providing reliable, affordable and environmentally-responsible energy to Yukon residents and businesses. Government's response to the report and plans for implementing the recommendations it adopts will result in a framework for a Comprehensive Energy Policy that will meet these challenges.

Publication of this report, and its submission to government, brings to an end the work of the Cabinet Commission on Energy. However, the approach taken by the Energy Commission in developing public policy is expected to encourage ongoing interest by members of the general public, industry and other stakeholders. While the Yukon government can do much to address the energy issues that concern Yukon people, the continued efforts and co-operation of all of us – individuals, industry and governments – will be necessary to ensure the future sustainability, reliability and affordability of our energy production and use in the Yukon.

APPENDICES

APPENDIX I: LIST OF RECOMMENDATIONS

General: ongoing, not time specific, and broad in scope

Short-term: implementation within 0 to two years

Medium-term: implementation within two to four years

Long-term: implementation within four or more years.

General recommendations

Recommendation no. 1

Yukoners should move away from electric heating systems as the primary source of heating. (page 12)

Recommendation no. 5

Develop trade and investment opportunities and cultivate export markets in circumpolar nations for Yukon expertise, products and services in the energy sector and continue to encourage technology transfer and applied energy research. (page 14)

Recommendation no. 11

Government should explore appropriate alternative fuels and/or vehicles for use within the government fleet. (page 17)

Recommendation no. 19

Government should oversee the development and implementation of a comprehensive *Rate Stabilization Initiative* that will lead to long-term stability in electrical rates. (page 30)

Recommendation no. 32

Guidance should be provided to industry to pursue cost-effective, efficient operations, including waste heat recovery, where new fossil fuel generation is deemed appropriate to supply industrial projects. (page 36)

Recommendation no. 35

Governments at all levels should assume a renewed role in energy planning, with sustainability being the guiding principle in public policy governing all energy forms and sectors. (page 43)

Recommendation no. 41

Locally supplied Green Power should be given priority when assessing electricity supply requirements for isolated (not connected to WAF Grid) industrial customers. (page 47)

Recommendation no. 42

Encourage co-operation between utilities, industry, IPPs and public stakeholders in energy supply planning. (page 48)

Recommendation no. 43

New investment in publicly funded energy infrastructure projects should adhere to general principles of sustainability and efficient use of resources. (page 48)

Recommendation no. 44

Government should encourage utilities to adhere to broad and specific community energy management (CEM) principles in all their activities. (page 48)

Recommendation no. 46

Government should continue its efforts to renegotiate with Canada the flexible term note on YEC's assets to eliminate the economic disincentive it creates against using surplus hydro electricity to displace fuel oil. (page 49)

Short-term recommendations

Recommendation no. 2

The Yukon public should have easy access to information on how to better manage energy consumption in their homes. (page 12)

Recommendation no. 3

Bring back a PowerSmart™ type of program targeted at total energy use. (page 13)

Recommendation no. 9

Government should encourage reduced vehicle use through:

- a tele-commuting pilot project; and
- a program that rewards employees for using alternative transportation methods, including car-pooling and greater use of public transit. (page 16)

Recommendation no. 12

Communities should be provided with resources to facilitate the start up and development of Community Energy Management at the community level. (page 18)

Recommendation no. 13

With community and government partners, the Yukon government should facilitate three community-based sustainable energy projects. (page 18)

Recommendation no. 20

Government should establish a Rate Stabilization Fund. (page 31)

Recommendation no. 21

Government should reaffirm its commitment to a Rate Equalization Policy. (page 31)

Recommendation no. 22

Targeted subsidies for people on low or fixed incomes and seniors belong outside of the rate setting process and, where deemed necessary, should be provided by government directly. (page 32)

Recommendation no. 24

Utilities should ensure that Yukon ratepayers are protected from financial risk due to supplying electricity to large industrial customers. (page 33)

Recommendation no. 37

Establish a Green Power Initiative to encourage "green" alternatives (like wind, solar, or small hydro power) which reduce greenhouse gas and other emissions. (page 44)

Recommendation no. 49

The Yukon Utilities Board should ensure that the principles of fairness, affordability and recognition for all parties with an interest in the process are fully addressed in a review of its Rules of Practice. (page 55)

Recommendation no. 50

Government should encourage further streamlining of the regulatory process to make it as cost effective as possible, through such means as extending the periods between full GRAs, while ensuring effective measures for accountability and protection of the greater public interest. (page 56)

Recommendation no. 51

Before the next General Rate Application hearing, identify some interim solutions that will improve intervenors' access to relevant information. (page 57)

Recommendation no. 52

Release to the public the results of government's review of the Regulations under the *Public Utilities Act*, which will identify any inconsistencies between the Regulations and the Act. (page 57)

Recommendation no. 54

Government should clarify the accountability relationships in the electricity sector in the Yukon. (page 62)

Short- to medium-term recommendations

Recommendation no. 38

Plan and implement at least one alternative energy pilot project with assistance from the Green Power Initiative, within a target of two to three years, preferably with IPP participation. (page 46)

Medium-term recommendations

Recommendation no. 4

Local market development of products that enhance and support the efficient use of energy should be encouraged. (page 13)

Recommendation no. 6

Eliminate conflicts with Community Energy Management (CEM) principles specifically in the areas of:

- community planning;
- resource management. (page 15)

Recommendation no. 8

Yukon Housing Corporation programmes should target energy efficiency in the residential sector to identify opportunities for efficiency in the design and operation of buildings as well as products and services. (page 15)

Recommendation no. 10

The *Energy Management Plan for Government Buildings* should identify and address design and operational barriers to reducing operating costs and greenhouse gas emissions. (page 16)

Recommendation no. 23

Non-industrial ratepayers should be isolated from the potentially detrimental impacts of supplying electricity to industrial customers. (page 32)

Recommendation no. 25

Government should develop a Yukon infrastructure investment development policy to ensure that industrial energy infrastructure issues are addressed. (page 33)

Recommendation no. 26

Review the Energy Infrastructure Loans for Resource Development Program (EILRDP) to ensure objectives, guidelines and project conditions support energy policy changes pertaining to large industrial customers. (page 34)

Recommendation no. 28

Alternative rate structures and supporting initiatives to target non-industrial customers should be investigated by government. (page 34)

Recommendation no. 29

A system of incremental energy block pricing should be investigated to help promote and encourage efficient use of electricity. (page 35)

Recommendation no. 30

Commodity-based rates should be investigated and seasonal rates pursued for large industrial customers. (page 35)

Recommendation no. 31

Government and utilities should strengthen their roles as resource agencies and facilitators to encourage the incorporation of best energy practices into industry operations and design. (page 35)

Recommendation no. 33

A comprehensive review of the Rate Stabilization Fund should be held every third year. (page 36)

Recommendation no. 39

Establish a set of social, environmental, economic and technical criteria by which proposed supply options should be evaluated. (page 46)

Recommendation no. 45

Electricity bills should provide information on each customer's historic electricity consumption to create more awareness about electricity use and encourage conservation, efficiency and economy. (page 49)

Recommendation no. 53

A formal review of the *Public Utilities Act* should be conducted to determine whether amendments could be made to support improvements to the regulatory process and utility operation. (page 58)

Recommendation no. 55

The Yukon Development Corporation and the Yukon Energy Corporation should be more accountable to the Yukon public. This could be achieved by:

- having the chair of the YDC/YEC boards appear annually before the Yukon Legislature;
- having YDC/YEC publish an annual "Shareholders Report" which explains the strategic plans as well as the operations and finances of the YDC and YEC in clear, plain language;
- holding an annual "Shareholders Meeting" on a set date each year. (page 62)

Medium- to long-term recommendations

Recommendation no. 7

Yukoners should be provided with information about the links between energy use, local environmental impacts, greenhouse gas emissions and climate change. (page 15)

Recommendation no. 14

Territorial, municipal and First Nations governments should work in partnership to develop special community land use and zoning standards (for example, density, mix of use, proximity, infrastructure). (page 18)

Recommendation no. 15

Transportation use in government operations, by individuals and industry should be targeted as a means to reduce operational costs and improve environmental standards. (page 19)

Recommendation no. 16

Demonstration project(s) that illustrate design processes, building materials and construction practices should be developed to educate the Yukon public and contractors about potential energy savings to be realized through sound building practices and operation. (page 19)

Recommendation no. 17

The private sector should be encouraged to use performance contracting and related opportunities to improve efficiency of existing commercial building stock. (page 19)

Recommendation no. 27

Utilities should pursue load diversification on the electrical system to help reduce the cost per kWh paid by consumers. (page 34)

Recommendation no. 36

Develop a Yukon-wide greenhouse gas reduction strategy. (page 44)

Recommendation no. 40

Government should investigate the development of a Yukon-wide emissions trading model to provide a "financial" incentive for investment in and development of Green Power. (page 47)

Long-term recommendations

Recommendation no. 18

Governments should examine ways to develop site and building standards (site layout, building efficiency) to improve the energy efficiency of local housing stock. (page 20)

Recommendation no. 34

Rates should gradually move towards the long-term objective of actual cost for different customer classes, as directed by the Yukon Utilities Board, without sacrificing the primary objectives of affordability and stability. (page 36)

Recommendation no. 47

Within the next 10 years, examine all communities that exclusively use diesel to generate electricity and identify opportunities to:

- displace diesel generation with renewable, green alternatives; and/or
- implement co-generation to make optimal use of diesel's waste heat energy. (page 49)

Recommendation no. 48

Grid extensions and inter-ties should be pursued only if such projects would keep electrical rates affordable for Yukon electricity consumers. (page 50)

Recommendation no. 56

Review the structure and legislative mandate of the Yukon Development Corporation. (page 63)

APPENDIX II: SUPPORT PAPERS

Discussion papers and technical papers produced by the Cabinet Commission on Energy

Discussion Paper on Electrical Rates and Relief; September 1997.

Technical Background Paper on Electrical Rates and Relief; September 1997.

Energy Options for the Yukon; March 1998.

Green Power Fund; March 1998.

Principles of Supply Options for the Yukon; March 1998.

Electricity Risk in the Yukon; April 1998.

Energy Efficiency for the Yukon; April 1998.

Opportunities for Community Energy Management in the Yukon; April 1998.

Rate Stabilization Fund; April 1998.

Reports of consultations

Comments from the 1998 Energy Options for the Yukon Questionnaire; June 1998.

Report on Community Consultation; June 1998.

Results from the 1998 Energy Options for the Yukon Questionnaire; June 1998.

Summary of Discussions: Energy Policy Working Meetings; June 1998.

Resource papers

In addition, the following resource papers may be of interest to readers:

- Wood
- Coal
- Wind
- Hydro
- Oil and gas
- Alternatives

All of the above documents are available from the Government of the Yukon. (See address on inside cover.)

APPENDIX III: GLOSSARY

District heating system

District heating system means connecting buildings together with pipes and heating them from a central source, similar to the way different customers are connected on an electrical grid. The heat can be transported by steam, although hot water is usually preferred. The system can be supplied by one or more energy sources, including waste heat from a diesel plant, or wood burned in a large boiler with backup provided by conventional heating oil.

Dual fuel

In this report dual fuel refers to a heating system that uses two or more sources. Frequently the preferred fuel is surplus (secondary) electricity when it is available, and the backup heating source (normally oil or gas) can supply heat automatically when less expensive secondary electricity is no longer available.

Energy

The ability to do work. Common units include kilowatt-hours, BTUs, foot-pounds, and joules.

Energy conservation

Refers to reducing the amount of energy consumed. This can be achieved by providing an energy service more efficiently, or by reducing demand for energy services, e.g. car pooling, riding a bicycle, taking a bus, or staying home instead of driving a car.

Energy efficiency

Refers to the amount of energy required to deliver an energy service.

Energy management

Refers to a range of management options including energy efficiency, alternative options to supply energy services (for example adding a woodstove), and changes to use patterns. Normally it is implemented with a goal of providing the desired levels of energy service at minimum cost.

Energy service

A desired effect provided through the use of energy, e.g. warm house, cold food, adequate lighting.

Firm energy

Refers to a guarantee to supply a given quantity of energy over a period of time. A wind generator can supply firm energy on a seasonal basis, since over a period of time the energy that will be delivered is more or less constant; however, it cannot supply firm demand as and when required since it is available only when the wind blows.

Firm power

Guaranteed capacity, or the ability of a plant to deliver power. This term is frequently used in inter-utility power sales agreements, where the supplier guarantees that a certain capacity will remain available. A hydro or a diesel plant can be said to supply firm power.

Interruptible electricity

Refers to the sales of surplus hydroelectricity to a customer which may be cut off by the utility. In some cases the utility system operator can use direct load control, interrupting power supply to individual appliances or equipment on consumer premises. Electricity can be interruptible on a seasonal, daily, or instantaneous basis. Interruptible electricity is normally sold at a preferred rate, on the understanding that the customer must either have their own backup energy source or be prepared to do without.

Power

Power refers to the rate at which energy is delivered. It is measured in Watts, BTU per hour, or horsepower. Electrical power is sometimes referred to as demand (of the customer) or capacity (of the power plant supplying that demand).

Secondary electricity

Refers to sales of surplus (excess hydro) electricity. Secondary electricity is sold at a price competitive with other heating options. Utilities sell secondary electricity at a lower price, on the understanding that its supply is not firm, i.e. that it may be interrupted at the discretion of the utility.

Surplus electricity

In the Yukon this refers to capacity to produce power from energy sources that cannot be stored (wind and run-of-river hydro) and is not utilized due to lack of load (electrical demand). Most of the water spilled at the Whitehorse rapids hydro plant in summer does not represent surplus electricity since it is water that could generate power only if the generating capacity were installed. Only a small portion of the water spilled would be required to utilize the surplus capacity at that plant.

APPENDIX IV: LIST OF ACRONYMS

AYC	Association of Yukon Communities
BTU	British Thermal Unit
EM	Energy Management
CEM	Community Energy Management
CEMP	Commercial Electricity Management Program
DAP	Development Assessment Process
DCF	Diesel Contingency Fund
EILRDP	Energy Infrastructure Loans for Resource Development Program
ESR	Electric Service Regulation
GP	Green Power
GPI	Green Power Initiative
GRA	General Rate Application
IPP	Independent Power Producer
kWh	Kilowatt Hour which equals the amount of energy used in one hour
MAE	Multiple Accounts Evaluation
NUG	Non-Utility Generator
OIC	Order-in-Council
REMP	Residential Electricity Management Program
RSF	Rate Stabilization Fund
RSI	Rate Stabilization Initiative
WAF	Whitehorse-Aishihik-Faro (electrical grid)
YDC	Yukon Development Corporation
YEC	Yukon Energy Corporation
YECL	Yukon Electrical Company Limited
YHC	Yukon Housing Corporation
YUB	Yukon Utilities Board
YISP	Yukon Industrial Support Policy