

Northwest Territories Power Corporation
Report of the NTPC Review Panel



January 2010

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Mr. Minister,

We are pleased to present to you our report on the review of the Northwest Territories Power Corporation. This report was prepared as a companion piece to the report of the Electricity Review Panel titled *Creating a Brighter Future: A Review of Electricity Regulation, Rates and Subsidy Programs in the Northwest Territories* which was submitted in September 2009.

The report was prepared based on discussions with the Corporation's senior managers and consideration of written information submitted by the Corporation, including public reports and data submitted to the *Public Utilities Board*, along with oral information provided by MLAs and NUL management.

The Panel noted that there were many misconceptions or misinterpretations about the Corporation driven largely by frustration caused by regularly increasing power charges including rate riders. The Corporation appears to have recognized that it needs to do a better job of explaining its realities of costs and logistics to ratepayers and the public.

The Panel notes that the Corporation's financial statements are audited annually by the Auditor General of Canada. However, the Panel believes that accountability to the Legislature and hence the public could be improved through closer personal relationships with the Corporation's senior managers and Directors.

This report may not answer all the concerns held by the public, but we believe it should provide information that many people may not have presently, or may not be aware of.

We thank all the people who contributed to this report.



Jim Guthrie, Chairman



R. Threlkeld, Member



R. Simpson, Member



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Part A

Preliminaries

Operating Environment

Introduction: In 1988, the Legislative Assembly of the Northwest Territories (NWT) created the Northwest Territories Power Corporation (NTPC, or the Corporation) through the *Northwest Territories Power Corporation Act* (the *Act*). NTPC resulted from the Government of the Northwest Territories' (GNWT) purchase of the shares and authority for the Northern Canada Power Commission (NCPC) from the Government of Canada. NCPC was a federal entity first established in 1948 to provide power to mines in the North, and later it was mandated responsibility for electrical generation and distribution across Canada's northern territories (then NWT and Yukon). NTPC was formed in 1988. In late 1990s the division of the NWT into the now-NWT and Nunavut resulted in the latter's portion of the Corporation's assets (and liabilities) later being sold to the Government of Nunavut in 2001.

NTPC Mandate: The mandate of a Crown corporation (what it is allowed and authorized to do) is not set by the Corporation's management or Board of Directors, but rather is set out in legislation. The mandate of NTPC was established in 1988, over 20 years ago.

The enabling *Act* established the Corporation's mandate under section 5 (1):

- (a) To generate, transform, transmit, distribute, deliver, sell and supply energy on a safe, economic efficient and reliable basis;
- (b) To supply water and sewerage services;
 - (b.1) To undertake programs to conserve energy;
- (c) To ensure a continuous supply of energy for the needs and future development of the Territories; and
- (d) To undertake any other activity authorized by the Executive Council.

Section 5(2) of the *Act* allows NTPC to create one or more subsidiary companies in furtherance of its mandate (objectives).

The mandate has also been shaped by GNWT Executive Council (Cabinet) direction to the Minister responsible for the Corporation. Perhaps the most significant directive came in August 2002, when Cabinet directed NTPC to:

- (a) maintain the provision of safe, secure, and reliable power to the communities of the Northwest Territories currently served
- (b) aggressively pursue alternative generation technologies that reduce greenhouse gas emissions (i.e. hydro, wind, solar, biomass, etc.)
- (c) aggressively pursue new domestic and export markets with a view to expanding the electrical sales base in order to reduce per kilowatt generation, transmission and distribution costs to clients served within the Northwest Territories
- (d) aggressively pursue partnership and joint ventures with northern parties to increase the economic benefit of electrical generation, transmission and distribution to the economy of the Northwest Territories
- (e) maximize the value of the Northwest Territories Power Corporation to its shareholder through profitable expansion and diversification.

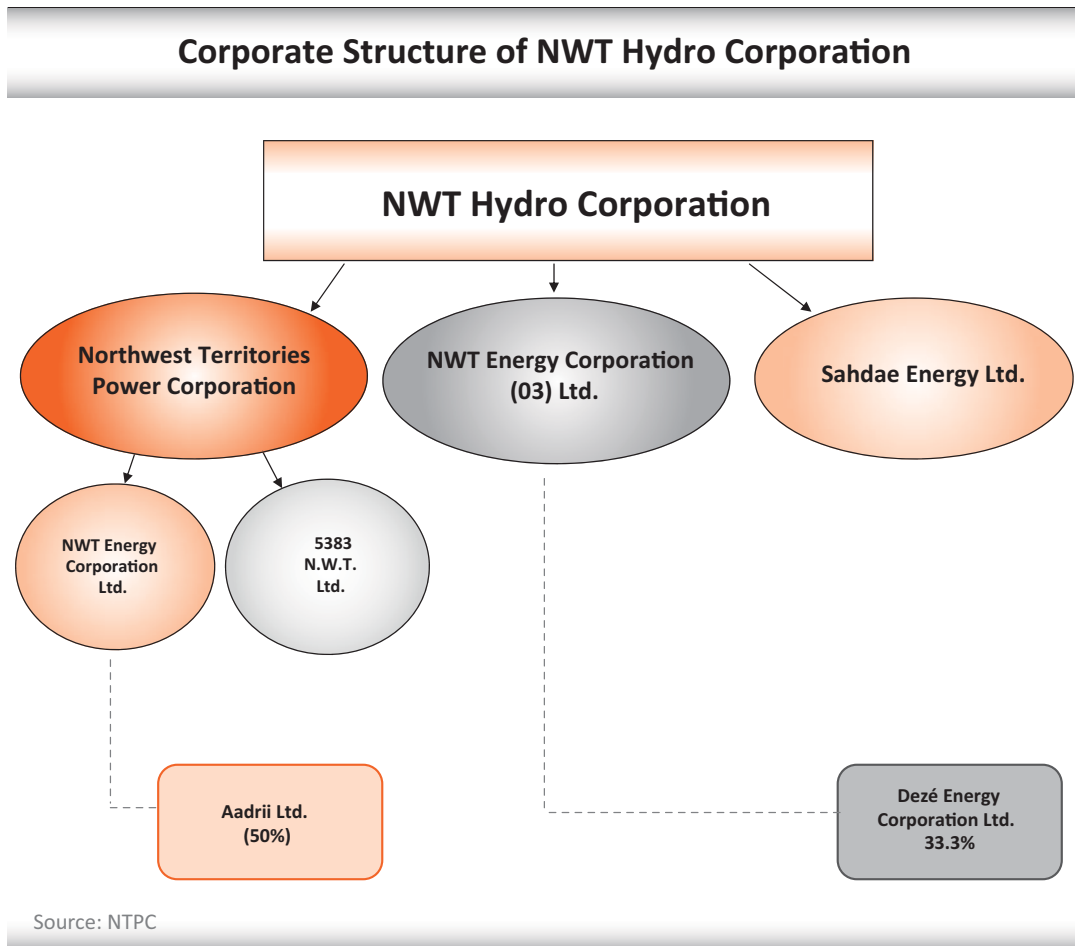
The Corporation's objects have also been amended by Cabinet to include:

- Financing the Snare Cascades hydro facility;
- Generate, transform, distribute, deliver, sell and supply energy and related services outside the Territories including elsewhere in Canada and in other countries;
- Supply, design, operate, maintain, construct, train, acquire fuel and provide other services in the Territories and elsewhere in Canada and in other countries in relation to diesel power plants; and
- to produce, gather, process, transport, distribute, purchase and market gas and natural gas liquids and to construct, operate, maintain and acquire and hold an interest in pipelines, processing plants and related facilities.

The Board of Directors interprets the mandate in order to establish clear and understandable objectives for everyday use. To this end, NTPC has produced a more detailed statement of its vision and mission (see Appendix 1).

The GNWT has established other energy companies to pursue objectives different from those of NTPC. The Northwest Territories Hydro Corporation was established in 2007 and is now the primary parent company of the group of GNWT energy companies. The GNWT group of companies are separated between those entities that are regulated and those that are not.

Figure 1



The Northwest Territories Energy Corporation (03) Limited (NTEC 03) and the Sahdae Energy Limited (Sahdae) are former subsidiaries of NTPC, but are now sister companies of NTPC and subsidiaries of NT Hydro.

NTEC (03) has two operations: the development of hydroelectric business opportunities outside of the regulated utility business and investment in the Deze Energy Corporation. The Deze Energy Corporation is pursuing a hydroelectric project that will provide hydro electricity to the diamond mines; Sahdae's sole function is to pursue a hydro development project on the Great Bear River.

The Hydro Corporation operates on grants and contributions from government(s), and dividends from NTPC. It has no customers to charge for its costs. Because tax payers are exposed to the economic risks (not just rate-payers), any future profits would therefore benefit, most directly, the taxpayers of the NWT rather than electricity rate-payers.

Regulation: Neither the Government nor the Corporation sets power rates. NTPC is regulated by the NWT Public Utilities Board (PUB). This is the body that sets power rates. NTPC has to develop and apply community-based rates that reflect the costs of generation and delivery in those locations, plus overhead costs and a return on equity (profit). This general formula also applies to private utility companies operating in the NWT, such as the ones owned by ATCO: Northland Utilities (NWT) Limited and Northland Utilities (Yellowknife) Limited (hereafter, NUL).

The *Northwest Territories Power Corporation Act* enables NTPC to make a profit (the rate of return) for the shareholder (the GNWT). The rate is reviewed and approved periodically by the PUB. The PUB requires a general rate application (GRA) complete with complex data sets to support any requested rate increases. For example, when NTPC's costs go up as a result of the increased price of goods and services that it purchases, the Corporation in turn needs more revenue from sales to cover costs.

Although the information collected through the GRA process is highly detailed and expensive to gather and assemble, it allows the PUB to look closely at the Corporation's costs. In the process, the PUB examines the Corporation's operations and allows interveners to make their own submissions to the Board and question NTPC managers about the GRA. Intervenors generally include lawyers, engineers and other professionals hired by customers or associations to challenge the rate increase requested.

Professional intervenors can be expensive and NTPC may have to pay their costs, although the PUB allows the Corporation to charge these costs back to customers through approved rates. Although many consider the PUB process to be expensive, it is an important and independent check on NTPC's finances and operations.

From time-to-time, other issues arise that are not anticipated through the GRA process. One example is when there is lower-than-needed snowfall (or insufficient rain) to top up the dams and provide a steady, sufficient flow of water for hydro production. The Corporation then has to burn more diesel fuel to produce sufficient power, often at a much higher cost. These extra costs may be allowed by the PUB as a "rate rider" under which the Corporation can temporarily charge more to its customers until the extra costs have been recovered.

NTPC's competitors are also regulated by the PUB and go through a similar process.

The PUB also monitors NTPC's terms and conditions of service and gets involved when customers approach the Board with specific concerns. From the correspondence that we have seen, there is a professional relationship between the Corporation and the PUB.

Increasing complexity: When NTPC’s mandate was first established in 1988, the operating environment was not the same as now. The NWT and the world are different places. Today, faced with a barrage of responsibilities and obligations, the Corporation often does not satisfy its critics. Below we list some of the contemporary challenges faced by NTPC as well as major influences upon corporate operations. (These are in no particular order.)

- NTPC Act (1988)
- Public Utilities Board regulation
- Expectations of Cabinet
- Expectations of MLA’s
- Competition/rivalry with NUL
- Inflation
- NT Hydro Corporation
- Debt/equity ratio
- Volatile fuel prices
- Enhanced safety laws
- Noise reduction
- Aboriginal partnerships
- Different sources of power generation
- Alternative energy technologies
- Environmental protection
- Climate change
- Customer service expectations
- Information technology
- Co-management board regulation
- Labour market
- Employment and remuneration laws
- Privacy laws
- Public perceptions
- Complicated financial reporting

Some public policy issues have become more prevalent today than they were in 1988. Attention to environmental protection (including the reduction of greenhouse gas emissions), noise pollution, improved safety regulations for the public and workforce, and emerging information technologies in business are significant areas of alteration.

In the past 20 years, the price of diesel fuel has increased dramatically. As a major user of diesel fuel, the Corporation is subject to fluctuating world prices. Inflation and other price increases affect NTPC’s costs and the price(s) it charges for electrical power.

Similarly quality of life changes have affected corporation operations and added to its costs; these include changes to privacy laws, equal pay for work of equal value, and affirmative action. This is all to say that the NTPC operating environment demonstrates increased complexity.

NTPC Review Panel

Introduction: The Minister responsible for the Northwest Territories Power Corporation committed to strike a review panel to study the operations of the NTPC. On 30 June 2009, members appointed to the NTPC Review Panel were announced. Panel members represent a cross-section of experiences, including utility operations, utility regulation, and finance/audit.

The review was only focused upon NTPC. The Panel did consider and compare costs and efficiencies of the entire system where available and relevant, including the costs and role of the two private companies that help to comprise the total NWT electrical system. The Panel also reviewed the operations of utilities in other Canadian jurisdictions, especially when fair comparisons could not be made using data from within the NWT system.

Methodology: We reviewed information submitted to the Public Utilities Board, extensive information provided by NTPC, and other documents and reports available in the public domain. A consulting firm provided some comparative data and analysis. It should be noted that the management and staff of NTPC gave willingly of their time and produced numerous documents and special reports requested by us. We thank them.

The Panel interviewed:

- Members of the Northwest Territories Legislative Assembly
- senior NTPC staff
- the Chairman of the Board for NTPC and NTHC
- Northland Utilities management

The Panel also benefited from the ‘what we heard’ consultation report of the Electricity Review Team (see *A Discussion with Northerners*). Many of the questions, issues and opinions gleaned from the public consultation phase of the electricity review were helpful to this study. Moreover, the consultation work of the Electricity Review Team allowed our Panel not to duplicate consultation efforts.

Key issues:

The following areas were of primary interest to the Panel:

- NTPC’s operational efficiency
- Reasons for the structure of the Government’s group of power companies, of which NTPC is a part
- Board of Directors and management approaches to the business and corporate objectives
- Assets, including related debt financing, life-cycle and depreciation, interest costs, asset condition, growth needs, etc.
- NTPC’s ability to respond to communities, residents, and customers, including the efforts that it puts into communications and their relevance.

Other reviews: The report of this Panel follows the publication of, *Creating a Brighter Future*, which reported on a review the NWT electrical system including subsidies, regulation and rates. If there is any overlap with the report of the Electricity Review Team we hope that this will help to add to a broader understanding of the whole picture. It is our understanding that the GNWT has received an unsolicited proposal from ATCO to consider some form of partnership with its NUL subsidiaries. This unsolicited proposal will be evaluated separately from either review.

Part B

Operational Efficiency

Thermal and Hydro Generation

This section speaks to the core element of NTPC’s business: the generation of power. Power in the NWT is generated from three sources: hydro, diesel, and natural gas. Regardless of the perspective from which one approaches a study of NWT power generation, a primary motive must be to reduce dependence upon diesel. Diesel generation is costly, a source of emissions and noise. This Panel understands the urgency to break diesel dependence. This Panel also recognizes the reality of energy use in the NWT and the constraints under which NTPC operates. As a result, our first question was to ask how NTPC operations compare given the operating environment and existing conditions? We addressed this question by analytically comparing NTPC operations against utility companies with remote diesel operations, including those that do not have the challenges that NTPC faces. Beyond this measure of performance, we also sought to unpack those solutions that are commonly expressed by critics of NTPC: popular solutions such as independent community generation, improved efficiencies, and better use of residual heat. Our objective was not to judge NTPC according to what they could do, but to measure NTPC against what they are mandated to do.

Generation by type: The Corporation generates power by the same three methods today as it did in 1988. However, the percentage of power resulting from diesel generation is considerably less than yesteryear. Hydro and natural gas now account for more of NTPC’s total generation. Below is a table that demonstrates how the balance between these three types of generation has changed over time since the inception of NTPC. During the time period reflected in the table below, the NWT was divided to enable the creation of the Territory of Nunavut. These data are NWT only: the figures in the table below do not include generation from plants now located in Nunavut.

Figure 2

Percentage of Power Generated by Source 1988/89 vs. 2008/09		
Generation Type	1988/89 (%)	2008/09 (%)
Hydro	60	79
Diesel	38	12
Natural Gas	2	9
Totals	100	100
Source: NTPC		

Thermal: NTPC has operated remote plants with diesel generation for over 20 years. NTPC diesel plants are the primary source of power generation in 19 NWT communities, ranging in population from about 100 people to over 1,000. Each plant is stand-alone with no transmission grid interconnecting them. Some plants previously run on diesel were replaced with natural gas generation (Inuvik, Norman Wells); this switch can, of course, only happen where natural gas is available. Where natural gas generation has been possible and has occurred it has saved considerable volumes in fuel imports.

Overall, NTPC reports that it has reduced its consumption of diesel fuel by 77 percent since 1989, from a high of 57 million litres to an estimated 12.8 million litres in 2009. This reduction has resulted from the Snare and Bluefish hydro capacity coming on stream, load reductions from the major mine closures, more efficient engines being used, conversion to natural gas, and automated control systems that help to balance demand and engine output.

Hydro: There are six hydro facilities operating today in the NWT. The total output capacity of the six NWT hydro facilities is about 54 MW. Four of the existing facilities were built and operated by NCPC prior to 1988, which

was subsequently purchased by NTPC when the latter Corporation was created. The only relatively new hydro development is Snare Cascades, which was built in 1996 by the Dogrib Power Corporation, which sells the power generated to NTPC. The Bluefish hydro facility was previously owned by Miramar Con Mine and was acquired from the mining company by NTPC in 2003. The NTPC partnership to build Snare Cascades as well as the decision to purchase Bluefish, were both strategically sound in light of the resultant decrease in reliance upon diesel generation.

Plant efficiency: We examined a Corporation report on forecast thermal generation and fuel efficiency (kilowatt hours per litre) for all diesel and gas plants in the NWT operated by NTPC. Fuel price varies by community depending on transportation costs (see Fuel section of this Report). The table below shows kWh generation, relative plant efficiency, fuel required, fuel price, and fuel cost.

Figure 3

Plant Efficiency by Community 2007/08 GRA Forecasts					
Plant	Thermal Generation (kWh)	Plant Efficiency (kWh/L)	Required Fuel (L)	Fuel Price (\$/L)	Fuel Cost (\$000)
Yellowknife	1,367,875	3.526	387,964	0.757	294
Wha Ti	1,718,111	3.711	462,938	0.897	415
Gameti	943,152	3.398	277,542	0.927	257
Behchoko	21,125	3.250	6,500	0.778	5
Lutsel'Ke	1,636,974	3.778	433,275	0.896	388
Fort Smith	465,700	3.277	142,102	0.793	113
Fort Resolution	60,000	3.459	17,345	0.860	15
Fort Simpson	8,274,903	3.755	2,203,443	0.862	1,894
Fort Liard	2,657,784	3.725	713,579	0.877	626
Wrigley	675,066	3.525	191,526	0.885	169
Nahanni Butte	345,115	2.511	137,419	0.877	121
Jean Marie River	277,117	2.749	100,816	0.858	87
Inuvik – Diesel	1,591,751	3.635	437,896	0.797	349
Inuvik - Gas	30,243,274	3.399	8,896,406	0.430	3,828
Norman Wells – Diesel	63,000	3.414	18,451	0.841	16
Norman Wells – Purchased	8,702,807	3.414	2,549,153	0.279	2,425
Tuktoyaktuk	4,357,463	3.697	1,178,604	1.001	1,180
Fort McPherson	3,453,124	3.609	956,851	0.925	886
Aklavik	2,817,285	3.475	810,712	0.914	741
Deline	2,610,153	3.546	736,072	1.015	747
Fort Good Hope	2,864,201	3.576	800,945	0.996	798
Tulita	2,146,986	3.634	590,828	0.905	535
Paulatuk	1,363,817	3.492	390,602	1.090	426
Sachs Harbour	857,302	3.189	268,811	1.075	289
Tsiigehtchic	853,545	3.537	241,296	0.985	238
Colville Lake	310,489	2.957	104,998	1.080	113
Ulukhaktok	1,977,069	3.616	546,753	1.111	607
Totals	82,646,187	3.510	23,600,821		17,562
Diesel only	43,699,106	3.605	12,157,262		11,311

Source: NTPC

Average diesel plant efficiency is measured in kilowatt hours of electricity produced for every litre of fuel consumed. The overall average for NTPC is 3.605 kWh generated for each litre of fuel. The efficiency of the plants in individual communities ranges from a low of 2.5 kWh per litre to a high of 3.778 kWh per litre. Gas generation is less efficient operationally (e.g., 3.399 kWh/litre in Inuvik compared to overall diesel efficiency of 3.605 kWh/litre on average) because the energy in natural gas is less than the energy in diesel fuel. However, overall, gas has cost efficiency benefits from lower fuel prices, no fuel tax (3¢/litre on diesel), and no inventory carrying costs.

Variance in levels of efficiency can result from several factors. The Corporation manages load differences by matching engine types and capacities with community need. This allows the Corporation to optimize generation equipment for maximum efficiency. However, smaller communities (with smaller loads) are served by generating units that have to operate outside of their optimal efficiency ranges to match load variations that result from rises or falls in demand. The main point is this: larger loads can be better matched to a combination of generator sizes than smaller loads. At any time the units can be selected to better match the size of the unit to the load. Generators operate most efficiently when they are operating at between 75 and 85 percent of their capacity. Efficiency falls off significantly when they operate at lower loads.

Comparisons with other utilities: We asked a utility consulting company if it could provide some meaningful cost comparisons between NTPC and other utilities with remote diesel operations. We wanted to understand whether the structure of NTPC's thermal and hydro operations caused NWT power to be more expensive.

Public concerns about the high cost of electricity generated and sold by NTPC, especially in more remote NWT communities, lead some to question whether an alternative utility might be cheaper. Results from studies undertaken by this Panel, cause us to conclude that NTPC costs per kWh sold do not appear to be unreasonable when compared with costs per kWh sold by Canadian utilities under similar operating conditions.

It is prudent to explain, in part, how we arrived at this observation. The expert utility consultant under contract assembled comparisons between NTPC and some generating plants operated by Newfoundland and Labrador Hydro (NLH) as well as Manitoba Hydro. Generating plants in these jurisdictions were chosen because they are most similar in operational aspects (both operate isolated diesel systems). The comparative data include the remote communities in Newfoundland and Labrador and Manitoba, where utilities run separate cost-of-service studies. The consultant cautions that while these are the latest publicly available information some of the data, particularly that from Manitoba Hydro, is dated. The data all come from publicly available sources.

A constraint in commissioning this type of study, in that the data does not convey detailed costs, because such information is proprietary; rather the data is derived from cost-of-service study results over a ten year period, in five year increments from the period 1997/98 to 2007/08. The cost-of-service studies contain forecast or prospective costs (rather than actual costs) and are used for setting applicable community rates.

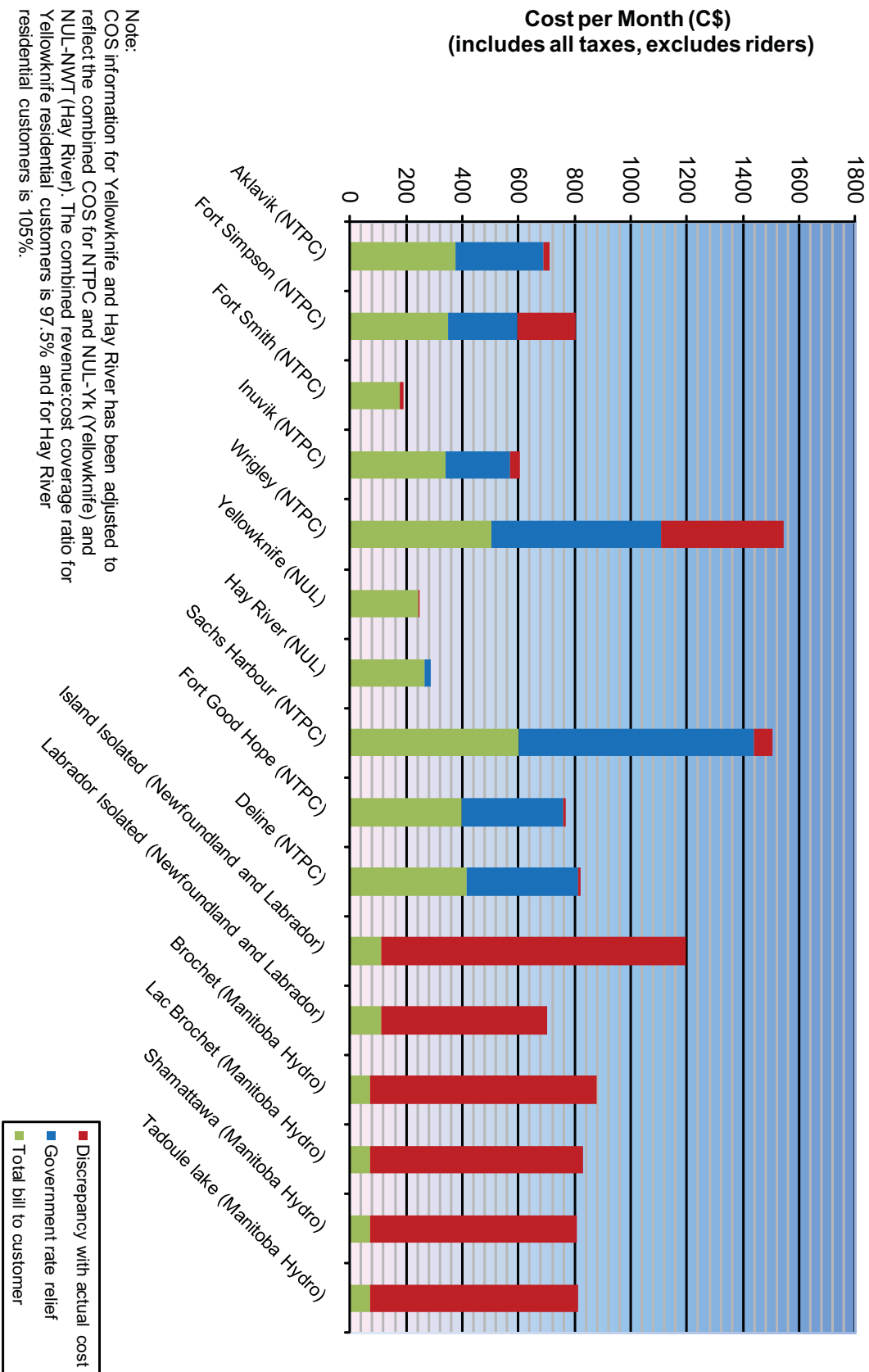
The consultant's NTPC data included generation, distribution, general and administrative (including head office) costs, amortization, and return on rate base (which is how the utility charges its interest expenses and its return on equity). For the NWT data, we asked the consultant, who is highly knowledgeable about the NWT's electricity sector and its utilities, to select ten NWT communities for comparison. The selection included Fort Smith, Inuvik, Wrigley, Fort Simpson, Aklavik, Yellowknife, Hay River, Sachs Harbour, Fort Good Hope and Deline, representing different generation sources and community sizes. The communities selected represent a good cross section of the NWT. Furthermore, it would be expensive and of little utility to analyse data from all NWT communities.

The comparisons also include data on three hydro service areas, Hay River, Yellowknife and Fort Smith, the first two operated by NUL and the third by NTPC.

NWT costs for Deline, Fort Good Hope, Fort Simpson and Aklavik are similar on average but, because of government subsidies and the power rates set on a community basis, some residents pay more than others. As one might expect, the costs in Sachs Harbour are high, about \$1,500 per month, but residents pay about \$600 of the total cost.

Figure 4

**Residential (Non-Government) Electricity Bill Comparison
(1000 kW.h/month Residential, based on most recent COS study and existing rates)**



NWT communities supplied with hydro power have lower costs (\$200 per month for Fort Smith (NTPC), \$240 for Yellowknife (NUL), and \$300 for Hay River (NUL), on average) with little in the way of subsidy. Costs are similar for comparable communities, but some communities in the NWT have costs higher than those found in other jurisdictions.

The consultant made the costs comparable by calculating them all on the basis of 1000 kWh per month. The cost of service for four Manitoba communities show an average power cost of around \$800 per month for residents, but they only pay about \$80 because of subsidies. In isolated communities in Newfoundland and Labrador, power costs for residents range from \$750 to about \$1,200 per month, but, as in Manitoba, residents pay significantly less than the actual costs, about \$600 per month. Again bill reductions result from subsidies.

The primary result was this: subject to the reliability and extent of the information analyzed, NTPC costs per kWh sold do not appear to be unreasonable when compared against costs per kWh sold by Canadian utilities operating under similar conditions.

Could communities go it alone and save money? During selected interviews, the Panel was told that some communities would benefit by breaking away from the NTPC system and generating their own power. One idea we heard was that new hydro development opportunities on Aboriginal lands should not be developed by NTPC, but should be left to local interests. We recognize that there is a political desire to enhance community self-sufficiency and lower the cost of living, but at the same time we would be negligent if we ignored the practical and economic realities of fragmentation.

We believe that the overall effect of select communities potentially pursuing independent power generation disconnected from the territory-wide system would be detrimental overall. Put simply, every time a piece is carved off from NTPC another part of revenue generation would be lost and costs would subsequently increase. It is our understanding that NWT residents are seeking lower costs.

Too rarely is the question of who pays for new power development(s) ever raised. As with any new technological development, developing new power generating systems (such as hydro projects) is often expensive and risky. At the end of the day, it is the customer who usually has to pay for the project. Government money, even if it is available, can come at a cost to other programs and services, or result in higher taxes. Outside business partners may be able to raise money in the financial markets, but this too has to be paid back; interest and other borrowing costs can amount to a lot more than initially realized. For small communities, projects without subsidies could be prohibitive because customer rates would have to be high enough to cover all the costs *and* make a profit for the local enterprise. Small utilities need staff to meet service demands and to provide safe and reliable power generation. This requires an adequate number of engineers and trade staff (electrical, mechanical, and hydro) as well as staff for management and administration. Small communities would be competing in the same labour market as NTPC and other utilities already do, and the record has shown this labour market to be constrained and highly competitive. For any reliability issues, who would the community based utility call in the event of a breakdown?

Hydro developments are sometimes seen as potential revenue generators (i.e., from power exports). There may be a way of eventually profiting from NWT hydro development, but selling large amounts of surplus power from remote communities is problematic as it stands given the current state of infrastructure, long distances, and overall project feasibility.

Residual heat: Although the construction of hydro facilities is the optimal method for getting off of diesel dependence in the long term, a more immediate possibility may result from the better use of heat already produced by diesel plants. Capturing and selling residual heat is a win-win prospect. NTPC already uses residual heat in its own plants, replacing the electrical heat used formerly.

NTPC has developed partnerships in some communities (for example in Fort McPherson with the Gwich'in, through the jointly owned Aadrii company), to develop better uses for residual heat produced during generation. The residual heat from the generating engines is used to heat glycol which is piped to other buildings for space

heating. This is a useful development as it allows heat that otherwise would be wasted to be used for heating nearby buildings. Apart from the initial capital costs, NTPC's operating costs do not significantly increase because no extra fuel is needed. The only other ongoing cost is maintenance and repairs. For example, with the Fort McPherson residual heat project, the initial capital costs were \$1.284M (1996/97); additional costs have come from projects such as replacing heat exchangers. As of December 31, 2008, revenue from Fort McPherson residual heat sales (price tied to price of fuel) was \$155,000 and total expenses were \$76,000 including operating costs of the system of \$24,000, half of which was to pay for power from NTPC to run the pumps. For the customer, buying residual heat is less expensive than buying heating fuel for furnaces. For the Corporation, an extra revenue stream is gained.

The Corporation has already developed residual heat usage successfully in Fort McPherson. The GNWT has performed residual heat studies in Inuvik, Fort Liard and Fort Simpson, and another is planned for Ulukhaktok. The Fort Liard project has been funded by the GNWT with a contribution from NTPC, and will be built in 2010-2011. Although residual heat projects hold potential for other communities, costs may be too high for community systems that are too small.

According to the Corporation, residual heat use will not work in all communities. The primary barrier to residual heat use appears to be a community's physical plan. Generating plants in some communities are located beyond the distance required to efficiently pipe heat to the buildings that could use it. When a generating plant is located too far from the buildings that could use the heat, hot glycol cannot be piped efficiently over longer distances (especially during times of extreme cold). The feasibility of residual heat applications is still being pursued for some communities. NTPC notes that the loss of heat in longer distance pipes could possibly be overcome with large enough capital expenditures although it would be uneconomic .

Developing residual heat systems is clearly within the Corporation's mandate. Perhaps more residual heat could be captured from plants, if community planning allowed for generating stations closer to occupied buildings. At the same time, we recognize that there are more factors in community planning than just energy efficiency. Diesel plants are noisy and some residents would like them to be further away from residential areas. Expanding the use of residual heat could help to substitute some fuel import costs, and thus help consumers to lower their bills.

Conclusions: The Panel compared NTPC's cost of service against other utilities most comparable to NTPC operations; it was also important to try to compare against NUL's cost of service, considering that both utilities (NTPC and NUL) comprise the NWT electrical system. It is important to emphasize the limitations of comparing NTPC, NUL and other utilities cost of service data.

- NTPC transmits and distributes power to 25 communities, and generates power from 6 dams and 25 thermal plants, including back-up capacity. It is headquartered in the NWT and carries all the functions necessary to run an independent company. NTPC has to buy fuel and parts in sufficient quantities, and transport them to remote locations in order to reliably deliver power. Unlike NUL, NTPC does not operate a retail power supply in larger communities.
- NUL comprises two companies (NUL-NWT & NUL-YK) that generate thermal power in 4 communities where access for the delivery of fuel and parts is less challenging. NUL also purchases power from NTPC at wholesale rates, and distributes (retails) it into 4 communities. Although its headquarters are in the north, some corporate support functions are out-of-Territory. The NUL companies, being subsidiaries of a large private corporation (ATCO), keep more of their costs and performance data confidential, although NUL notes that it files annual audited financial statements with the PUB.

Considering the distinct characteristics of NTPC's operations (i.e., remote locations), which few utilities in Canada resemble in any meaningful way, the Panel concludes that the Corporation has done a good job generating power. Since its inception, NTPC has increased generation from hydro and/or natural gas and reduced dependence on diesel by 77 percent. Compared against utilities with operations that are most comparable to NTPC's operating conditions, NTPC's cost of service is lower or in line with other utilities. Among hydro supplied communities in the NWT analysed, the one operated by NTPC (Fort Smith) has the lowest cost of service.

Fuel

Many people in the NWT attribute the cost of power to the price of fuel. Some people have wondered why, if fuel prices fall, they do not see corresponding decreases in their monthly power bill. For example, falling fuel prices in the latter part of 2008 and early in 2009 did not lead to reduced rates. This causes people to think that NTPC is not passing on price savings, and that the Corporation or the GNWT is profiting. The objective of this section of the Report is to explore the fuel purchase and distribution systems in place, and understand whether NTPC is maximizing cost efficiencies for NWT consumers.

The purchase and delivery of fuel for the NWT is primarily driven by stability of supply. This makes fuel purchase decisions complex. Unlike with the buying and selling of some products, running out of fuel is not an option: adequate supply is vital and emergency resupply is very expensive. The Panel examined the way NTPC acquires and distributes diesel fuel. We show the prices paid by NTPC for five communities, and note why and how purchase timing and approach can significantly affect overall cost. To improve fuel purchase efficiencies, NTPC has partnered with the Petroleum Products Division of the GNWT, whose primary mandate is the buying, delivering and storing of fuel. We examined the question of price hedging as a way to reduce susceptibility to market volatility and, more importantly, looked at the fuel prices paid by NTPC to determine whether NWT residents are getting the best prices possible.

Rising price of fuel: In ongoing discussions about rising electricity prices in the NWT, the costs of using diesel engines is often put forward as a primary problem. Over the years, NTPC’s investment in fuel efficient engines and resultant gains in efficiency may have been lost to rapidly increasing fuel prices. That is because the price of fuel is driven, in large part, by the price of oil.

Figure 5

Price of Crude Oil (Illinois Basin) 1999-2008		
Year	Yearly Average	Year Over Year Increase (%)
1999	\$16.55	-----
2000	27.40	66.00
2001	23.00	-16.00
2002	22.81	-0.90
2003	27.69	21.40
2004	37.41	35.10
2005	50.04	33.76
2006	58.30	16.51
2007	64.20	10.12
2008	91.48	42.49

Source: Illinois Oil and Gas Association

Canada produces a lot of oil, but in turn sells the resource at world market prices. There is no price break for being Canadian. In 1988, when NTPC was created, the average price per barrel of oil was \$14.87. In June 2008, prices rose to their highest peak at \$126.33, but slipped back by year’s end to \$32.94. In September 2009, the price had again doubled to \$60.98. This long term trend demonstrates not only a significant overall price increase, but also price volatility.

Total prices are also affected by economic drivers such as inflation. Since 2000, Canada’s rate of inflation has increased by over 2 percent each year. The cost of doing business – due to rising costs for maintenance, goods, labour – increases in turn. Inflationary increases over the past 10 years are over 20 percent.

PPD Fuel Purchase Agreement: Since 2005, NTPC has contracted the Petroleum Products Division (PPD) to supply its fuel and manage its tank farms. PPD is a part of the Department of Public Works & Services, GNWT. The *Petroleum Products Revolving Fund Act* requires PPD to recover its full operating costs from the retail sale of fuel products, including product costs, transportation, sales commissions, O&M costs, evaporation losses and taxes. PPD does not recover its capital costs or financing charges in its prices, and, importantly, does not include a margin for profit. This makes the price paid by NTPC more attractive than alternative purchase options.

NTPC and PPD have entered into an agreement called the *Fuel Management Services Agreement*. Under the agreement, PPD makes fuel purchases, arranges for the fuel to be shipped to designated communities, and stores the fuel either in its own tank farms (until it is needed by NTPC) or in some cases in tanks owned by NTPC but managed by PPD. PPD also provides all tank farm maintenance for NTPC in the serviced communities. This latter arrangement has allowed NTPC to dismantle some of its own tank farms and save on staff time, training and capital investment.

The cost charged to NTPC by PPD is determined using a formula known as the ‘weighted average cost’, which is calculated factoring the cost of the inventory on hand, the cost of new supply, the spot price, the transport fees, the fuel service charge, and the local contractor commission (depending on how fuel is transported within a community). Among other benefits to NTPC (e.g., stability of supply), fuel service charges are well below what the private sector pays for fuel, and are also well below what NTPC was paying before 2005.

For example, in 2008/09, PPD sold nearly 14 million litres of non-motive diesel to NTPC; according to the *Fuel Management Services Agreement*, NTPC would have paid a fuel services charge of \$0.07/litre, whereas prior to the signature of this 2005 agreement NTPC would have paid \$0.22/litre. This is not the final cost for fuel, but signifies how much NTPC saves as a result of its arrangement with PPD. It would be unlikely that a private utility in the NWT would be in a position to negotiate such a benefit for its customers.

Overall, it is our view that this agreement between NTPC and PPD has been very beneficial in consolidating fuel purchase/management expertise and thus contributing to the lowest fuel management cost efficiencies possible.

Acquisition: Shippers of large volumes of fuel need to know early-on how much fuel is to be delivered and to where. This information is critical for planning operations during the limited northern shipping season. For those communities supplied by marine transport (Northern Transportation Company Limited - NTCL), fuel orders need an especially long-lead time. To be able to coordinate fuel volumes with available transportation, orders must be placed before the end of the calendar year for delivery the following summer. Fuel quantities are placed in the fall for delivery during the winter road season (February to April). Communities receive their entire annual fuel requirements during that single period. Diesel for Lutsel K’e, Tulita, and Fort Good Hope comes from Imperial Oil’s Strathcona refinery and is shipped by rail to Hay River. Four communities are serviced by NUL: Fort Providence, Dory Point/Kakisa, Trout Lake and Wekweti.

Other diesel comes from international suppliers which deliver the fuel by chartered vessel to Tuktoyaktuk harbour and then transfer it to barges for onward transportation. The fuel is inspected for quality at the loading port of the chartered vessel.

All season road deliveries are forecast and delivered in accordance with an annual schedule of requirements provided to the carrier. Except for the Jackfish plant in Yellowknife, all season diesel fuel is usually supplied from Shell’s Scotford refinery in Edmonton. Jackfish is supplied by a local contractor, which keeps 1 million litres in stock during the spring thaw as a contingency.

The purpose of explaining this acquisition process is to demonstrate the extent of future-oriented decisions that a fuel purchaser must make. NTPC and PPD employ their combined expertise to predict as accurately as possible how much fuel is required. They cannot know how cold the winter will be or how demand might fluctuate due to macro-economic factors. NTPC does know, however, that it cannot run out of fuel.

Security of supply: PPD manages its inventory conservatively, meaning that it never allow its stocks to fall below a pre-determined safe margin. Neither PPD nor NTPC can afford to run out of fuel during the coldest months in

the NWT because of winter supply difficulties and the overall risk to NWT residents and businesses. Security of supply is *the* primary consideration in northern fuel management.

Supply: In 2008-2009, PPD supplied about 14 million litres of diesel to NTPC. PPD delivers fuel by rail to Hay River where it is transhipped by marine transport to:

- Lutsel K'e

PPD uses a combination of marine transport and winter road transport to:

- K'asho Got'ine (which supplies Colville Lake by winter road transport)
- Tulita
- Inuvik (which also supplies Tsiigehtchic and Fort McPherson by all season road transport)
- Tuktoyaktuk
- Sachs Harbour
- Paulatuk
- Ulukhaktok

Fuel is shipped from Hay River to four communities by all season road transport:

- Fort Liard
- Fort Simpson
- Wrigley
- Jean Marie River

And four communities by winter road:

- Deline
- Whati
- Gameti
- Nahanni Butte

Prices: As world market oil prices have increased over recent years, so too has the price of electricity in the NWT. In the five year period from 2004/05 to 2008/2009 (end March 31), NTPC's average fuel prices in five selected communities have increased as follows:

Figure 6

Percentage Increase in Fuel Price (\$)/litre, 2005 against 2009			
Community	2009 price (\$)/litre*	2005 price (\$)/litre	Increase (%)
Rae Lakes (Gameti)	1.21	0.63	92.3
Wrigley (1)	1.22	0.51	137.3
Tuktoyaktuk	1.22	0.62	95.2
K'asho Got'ine	1.22	0.60	103.2
Paulatuk (2)	1.32	0.94	34.3

(1) Deliveries in small quantities by road. Co-occurred with the high market prices.
 (2) Large carryover of less expensive inventory from the previous year.
 * Prices after 31 March 2009 are generally lower with reductions of 28¢/litre in Gameti, 25¢ in Wrigley, 21¢ in K'asho Got'ine, and 20¢ in Paulatuk. NTPC will not yet have reaped the full benefit of these reduced prices.

Source: NTPC

We were asked if there were any identifiable differences in fuel prices between what NTPC pays and what NUL pays. Below is a table of the fuel prices paid by NUL and NTPC for a total of six selected NWT communities during 2007/08. Please note that the prices listed for three communities serviced by NTPC represent the average price over the year 2007/08. We did not have directly comparable data for NUL. The prices listed for three communities serviced by NUL represent the price at a single point in time (1 April 2008).

Figure 7

Fuel Prices Compared, NTPC & NUL 2007/08		
	Community	Fuel Price (\$/litre)
NTPC	Rae Lakes	1.0262
	Wrigley	0.9248
	Fort Good Hope	1.106
NUL	Fort Providence	0.8297
	Dory Point	0.8096
	Trout Lake	1.155

The price for NTPC is based upon the average over 2007/08; the price for NUL is based upon the price for 1 April 2008.
Sources: NTPC and NUL (NWT) Ltd.

While the NTPC prices include a 7¢/litre levy from PPD to cover operations and maintenance (O&M) the NUL prices do not include a component for O&M which is charged elsewhere.

Comparing the two utilities on this level is questionable. NUL operates four small diesel operations in the southern part of the NWT, and retails power in Yellowknife and Hay River. NTPC supplies many communities in difficult supply locations, where year round road access can be problematic or non-existent. In order to service its many remote plant locations, NTPC has to buy sufficient quantities and quality of fuel to ensure that no diesel plant runs out of fuel. Security of supply is vital to northern survival. These data do not provide sufficient evidence to conclude whether NTPC prices are higher or lower. Other factors (such as acquisition and supply) allow us to draw conclusions about whether or not NTPC is purchasing fuel at the best attainable price.

The public expects to see reductions in their power bills when there is a significant and sudden drop in world market oil prices. Such a perspective is, on the whole, a rational expectation, but is incongruent with the actual logistical and price constraints placed upon NTPC.

What the acquisition process explained above demonstrates, is that fuel costs, purchased in bulk for shipping prior to the winter season, reflect the prices in place at purchase time – not the price of fuel at the time a customer draws down on their community supply. Prices paid are a blend of previous year costs (the left-over inventory from the previous year) and current year costs (the price paid at resupply time).

Some asked about potential economies from bulk buying. One cannot explore the purchase question in isolation from other related concerns, such as the reality of a limited shipping season and the need to ensure security of supply at each plant location. Looking exclusively at price, in isolation from critical supply issues, is, in the Panel’s opinion, putting the cart before the horse. The logistics of NTPC’s fuel purchasing system, especially now that they are in partnership with PPD, is the most effective way of ensuring a reliable supply. PPD has had years of experience buying and supplying fuel of various types to northerners. Except for the vagaries of world price fluctuations, we see no reason to believe that PPD does not do the best job possible and obtain the most advantageous price possible.

Community based rates highlight the difference in costs between larger communities on the hydro system and small remote communities where the costs of fuel delivery and service are higher. For example, prices for those communities resupplied with bulk fuel in the winter/spring of 2008/09 were a blend of the high price at purchase time in the latter part of 2008 and the cost of unsold inventory from the previous year. This means that the average cost for the upcoming cold season will be higher than the low price of oil seen during the summer of 2009. Only those communities where purchases are made for delivery by all weather roads and not out of PPD bulk fuel storage would experience immediate benefits from the lowering of world prices.

None of these world market price changes could, of course, be foreseen. The only way to possibly avoid the feeling known as 'buyer's remorse' - where a person buys at a certain price, and then at a later time the price drops - is to hedge.

Price hedging: Some people have asked us whether NTPC hedges on its fuel prices and whether this is, generally speaking, a recommended practice. To hedge, is an attempt to reduce the risk of loss by securing prices to some degree against exposure to future price fluctuations although there is a corresponding opportunity to increase the risk of loss depending on the insight of the decision maker and the vagaries of the market. Hedging is designed to stabilize prices. Hedging is not a guarantee of lower prices. For example, a fuel purchaser hedging early in 2008 against the rapid increase in world market oil prices would have lost money later in the year when prices plunged (likely below the hedged price). That is because, if the market price is higher than the negotiated rate, the bank pays the difference; if it falls below, the hedger makes up the difference to meet the negotiated price. This latter situation can be costly. If the market unexpectedly goes 'the wrong way', it can be an expensive gamble.

The Corporation hedges on some of its fuel purchases, and has since 1994; it does so in accordance with its policy, *Financial Instruments – Managing Commodity Price Risk*. The Corporation may use commodity price management products to prudently limit adverse fuel price movement or to share benefits from favourable price movement. Transaction type, quantity, and timeframe are all moderated by the policy. The Corporation makes use of a combination of commodity swaps and fixed price contracts. The Corporation estimates that this approach has achieved a total savings of \$2.1 million (dated 31 July 2009). These savings have been passed on to customers through the use of stabilization funds.

Conclusions: The Panel concludes that NTPC has done a good job in fuel management. The Agreement reached with the GNWT's Petroleum Products Division in 2005 enabled the efficient purchasing and handling of fuel on behalf of NTPC. PPD manages its fuel levels conservatively and correctly prioritizes security of supply. NTPC use of financial instruments such as price hedging has proved beneficial over the past 15 years. Customers in the NWT may feel frustration when the world market price of oil drops significantly and power bills remain the same; what goes unnoticed is that NTPC's approach has enabled relative certainty in fuel prices during periods of inflation and high oil prices.

Reliability

Reliability is a critical factor in northern power generation. Particularly during winter months, there is considerable risk to human life as well as to the preservation of goods and delivery of services if a community is without power for an extended period of time. Taking into account the many comments about NTPC heard by the Panel, rarely did an observer view NTPC as patently unreliable; however, there were concerns about the frequency of outages experienced in some communities as well as power surges from time to time.

Measures of reliability begin with maintenance and repairs and extend through the implementation of operational contingency planning when system failures do occur. In the area of maintenance and repairs it is important that generation systems be evaluated based upon the notion of prevention. In an area such as back-up capacity, it may be more useful to evaluate the power generation system as a whole in light of the necessity for back-up generation. The simple objective here is to conclude, based upon available evidence, whether NTPC is a reliable power provider and whether the overall cost of reliability is justifiable.

Maintenance and repairs: All equipment requires maintenance and repairs. The Corporation has a preventative maintenance program that allows it to control when assets need scheduled attention, and also to predict to the PUB when overhauls will occur and when related costs will be incurred.

Diesel plants in Fort Resolution, Norman Wells, Inuvik, Fort Smith, Behchoko and Yellowknife are run once a month (called “exercise” by NTPC) because power in these communities is generated primarily from hydro and natural gas. Thus, the period between overhauls at these locations is consequently longer. NTPC does preventative maintenance on distribution systems using thermal imaging to detect problems with lines and transformers. Hydro systems are inspected and maintained annually and are shut down for the duration, usually a period lasting from one to three weeks.

A mix of contractors and internal staff do the maintenance and repairs. Total major contractor costs for maintenance and repairs (including the costs of materials) were under \$5 million dollars for the four year period 2004 – 2008. It would be outside the scope of this study to run a detailed analysis of the contractor-staff balance in maintenance and repair costs; it is possible to observe that given the technical expertise required in this area, the remote location of much diesel generation in the NWT, and the average age of NTPC engines, it appears reasonable that approximately 25 percent of the NTPC contracting budget should go towards maintenance and repair costs.

During maintenance, any problems identified by inspection are repaired. Diesel engines are routinely maintained on a daily basis (replacing lubricating oil, inspecting temperature and pressure gauges, plus cleaning, etc.). Larger items such as gensets (diesel engines and generators) are expensive to maintain but preventative measures can get the best life out of a piece of equipment. Gensets comprise two main parts, the generator and the engine. The generator has a predicted life of about 30 years and normally requires little maintenance other than cleaning and checking. If a major problem is discovered with a generator, it is often less expensive to replace rather than to repair. An important factor is that the load on an engine does not affect the overhaul period. An example quoted to us is that a 300 kW genset operating at 270kW will require a 5,000 hour overhaul at the same time as a 300kW genset operating at 150 kWh will still require a 5,000 hour overhaul. In short, maintenance and repair costs will remain relatively static regardless of load.

Engine block replacement is often less expensive than a major overhaul. Engines in prime power plants (as opposed to back-up) in each location can run up to 6,000 hours per year and consequently need replacing every 15 to 16 years, whereas back-up units will last more than 30 years. The age of NTPC generating units ranges from one year to 33 years (dated in 2006). Although that latter figure may appear to be at the high end, a survey of the age of generating units operated by other Canadian utilities reveals diesel engines over 40, 50, and 60 years old. NTPC is operating well within the norm.

Engine lifecycles are measured in running hours, not years. Normally an engine will last between 90,000 and 100,000 hours, during which NTPC does three major overhauls. NTPC developed the overhaul interval in conjunction with Caterpillar and uses the same schedule for all types and makes of engines. Overhauls vary depending on the engine size, speed, make and operating hours.

Hours between overhauls:

- Minor: 5,000 hour intervals
(inspection, testing, tune-up, changed turbo chargers and filters)
- Top: 15,000 hours
(same as for a minor overhaul, plus replace the heads, fuel injectors, water and fuel pumps)
- Major: 30,000 hours
(same as a top overhaul, plus replace pistons, liners, connecting rods, oil pump, oil cooler, plus inspection of after cooler and vibration dampers, and in some cases may include engine block replacement if less costly)

Staff reviews every overhaul to assess the cost-effectiveness of repair versus block replacement. They examine life-cycle costs including the overhaul, future fuel usage and maintenance versus the cost of a new block, future maintenance and fuel usage. Fuel usage is an important factor because, generally speaking, newer more efficient engines can save a lot of money. At the same time, engine manufacturers are responding to regulations that require greater reductions in emissions. This means that, from an efficiency perspective, NTPC may, in some cases, be better off with the older engines they have. That is because fuel economy is a function of how much energy is derived from the fuel used. With new engines designed to further reduce emissions, exhaust gases displace some oxygen; by displacing oxygen with exhaust, less fuel is used each time the cylinder fires. Using less fuel reduces the amount of power generated, and a less powerful engine means more oxygen and fuel must be used to generate the same amount of power.

Emergency situations: A utility company must be prepared to respond to emergencies. The consequences of an emergency at a utility in the NWT are magnified by the territory's long cold winters and the remote location of many of its communities. Apart from dire emergencies such as a fire, there can be other events that interrupt power supplies; for transmission lines, lightning can take out the wires, falling trees in bad weather can do likewise, and heavy snowfall can be another problem. An emergency is defined by NTPC as a sudden, unusual or unexpected occurrence requiring immediate response. Because emergencies are inevitable in the utility industry, emergency generation capability is critical. NTPC back-up capacity is discussed in a separate section below.

NTPC has an excellent track record of getting power back up quickly. The plant fire in Fort McPherson in 2004 offers a good example of a case where, in response to a major emergency, power was fully back up within 36 hours of the fire and emergency power was on within 10 hours. When one considers that a power outage in downtown Toronto early in 2009 - not caused by a major fire - lasted approximately 15 hours until power was fully restored, the reactivation period during the Fort McPherson incident appears exemplary. The average time for NTPC to restore power during all outages in 2008/09 was 30 minutes.

The Corporation has invested in automated control systems that allow it to monitor demand and production, and bring plants on line without manual intervention when the situation requires it. For other incidents, the Corporation has a quick response capability and can deliver emergency generators to a community by road or air, depending on seasons and conditions. Emergency generators are stationed in Inuvik, Fort Simpson, and Yellowknife.

In June 2006, there was a breach in the dam at Snare Forks. The dyke had settled over time and with the high water inflows at that time, water was going over the top of the dam. This caused it to erode and subsequently to breach. NTPC sent a repair crew to the site to top off the dam but because of inclement weather the crew arrived too late to stop the breach. The escaping water deposited silt in the lake below the dam, leading to an indictable offense under the *Fisheries Act*.

Prior to the breach, a survey was done on the dyke and sent to the NTPC engineering department. The survey was not acted upon promptly because the department was occupied with the emergency rebuild of the Fort McPherson plant, following a destructive fire. While one can understand the demands on the department caused by the Fort McPherson fire, the lack of attention to the survey is hard to excuse. Even if staff were fully preoccupied, the Corporation's executive should have been able to deal with the emergency.

In emergency situations, NTPC is guided by emergency preparedness plans specifically crafted by generation type and location, as well as a more general Incident and Emergency Response Plan that sets out roles and responsibilities for NTPC personnel and others, depending on the type and severity of the emergency. NTPC is governed by well developed emergency planning guidelines.

Outages: Power outages are an irritant or aggravation when short in duration, and can be a threat to the security of people or goods when prolonged over days. Outages can be caused from complications that result from planned disruptions in generation service (e.g., to perform maintenance), from environmental factors that stall or stop generation, or from unexpected impacts upon transmission systems. One step NTPC has taken for communicating the timing, cause(s) and duration of an outage, is to report situation-specific outage information in a timely fashion on the NTPC website.

Some examples of recent outages are:

- Fort Smith: A broken oil line during the Taltson shutdown caused a power outage of just under 4 hours; but when there were further problems starting back-up units, emergency units had to be brought in and part of the town was without power for 11 ¾ hours.
- Tuktoyaktuk: Cracked insulators caused a power outage of just over 17 hours after bad weather delayed the arrival of repair crews.

In a 2008-2009 annual survey of NWT residential customers conducted for NTPC, 70 percent of people agreed that NTPC provides a reliable power supply. Given the absence of comparable data, we have no way to accurately judge whether 70 percent satisfaction is good or bad. We do note that fewer and fewer people every year (now 66 percent) think that NTPC is prompt in responding to outages. We do not know whether this is due to changes in NTPC response times or changes in people's expectations.

NTPC does not base technical staff in every community due to expense constraints, economies of scale, and barriers to recruitment. The consequence is that repair crews have to be brought in to some communities to deal with problems. This results in some delays. Delays are often caused by inclement weather. We believe that these delays - however frustrating for those residents going without power - are reasonable, given how expensive it would be to base stand-by technicians in every community and particularly given the difficulties already experienced in recruiting technical staff such as linemen and engineers. As noted above, NTPC's overall power reactivation time is well within reasonable expectations for this industry.

In September 2006, the Corporation hosted the Prime Power Diesel Inter-Utility Conference and asked all the attendees to contribute information on a number of topics. Not all of them gave information on everything asked, but from what they did submit, we were able to get some data comparisons. We caution that the data were not collected on a scientific basis and it is not clear if all data were reported using the same criteria. Nonetheless, the data for NTPC show that power availability often meets or exceeds the industry standard. The industry standard for reliability is 99.97 percent provision of power. Over the past five years, only once has NTPC fallen short of this marker (caused by weather delays), and twice during that time period the standard was exceeded. The average of outages was 28.8 minutes compared to 14.4 minutes in 2007-2008. These figures are representative of normal averages over the past ten years.

Data from the utilities operating in similar (although not identical) environments shows that NTPC's record on outages compares favourably with data from other Canadian diesel utilities. ATCO, Newfoundland Hydro, and BC Hydro, for example, all reported that they had over 99.9 percent reliability, but this figure was only for a single year. Several comparable utilities reported average outage durations longer than NTPC, and no one reported shorter averages. This shows that NTPC is at or near the top of reliability comparisons.

Sometimes people just want to know why the power has gone out. Although the examples above are illustrative, aggregate outage data tells a more complete story.

NTPC tracks the causes of power outages using eight different categories:

- Loss of production caused by equipment failures or breakdowns
- Loss of supply due to problems with the transmission or distribution system
- Scheduled outages due to disconnection for construction, maintenance or repair
- Lightning strikes to transmission or distribution systems
- Adverse weather such as rain, ice storms, snow, winds, extreme temperatures, freezing fog or frost
- Human elements such as incorrect use of equipment, settings or installation maintenance; switching errors or sabotage
- External interference such as birds, animals or foreign objects
- Unknown where there is no apparent cause

The data below shows average outage statistics for the three year period 2006/07 – 2008/09 (ending March 31, 2009). Place of outage is grouped by either Hydro Region and Thermal Region; type of outage has been amalgamated into five categories: Loss of Production, Loss of Supply, Scheduled, Human Element, and a hybrid category for “other” (that includes weather, birds, lightning, unknowns, etc.)

Figure 8

Average Percentage of Power Outage Causes 2006/07 – 2008/09					
	Loss of Production	Loss of Supply	Scheduled	Human Element	Other
Hydro	26	20	8	1	40
Thermal	54	11	11	3	22

Source: NTPC

According to averages from the past three years, the most significant cause of outage differs between the hydro and thermal regions. In the hydro region, factors that are largely beyond the control of any utility (e.g., inclement weather, lightning strikes, etc.) cause the greatest number of outages. Outages for this region are also often caused by loss of supply; one should recall that, in the hydro region, responsibility for supply is shared with Northland Utilities (ATCO). In the thermal region, it is the loss of production resulting from equipment failures or breakdowns that is the major causal factor.

Outage attribution and responsibility: What the public may not realize is that the hydro electricity system is owned and operated by three separate corporations. NTPC owns and operates the hydro generation facilities and the transmission of power up to the point where one or other of the NUL companies takes over. NUL distributes power into retail markets in Hay River and Yellowknife, including supply to individual buildings.

NTPC owns, operates and is responsible for its part of the system. NUL owns, operates and is responsible for the city/town distribution systems supplying Hay River and Yellowknife.

We have noticed a tendency to attribute most outages to NTPC for outages in Hay River and Yellowknife. We believe this is because the public does not necessarily know where the problem occurred or who owns and maintains distribution in those communities.

Some outages result from “Acts of God”, such as lightning or other weather related occurrences, forest fires and the like, and these, like planned outages for repairs and maintenance, cannot be blamed on any operator. Sometimes customers’ equipment causes outages for example if a crane comes into contact with an overhead wire, a vehicle accident knocks over a power pole, or people digging and disturbing buried cables.

Outages caused by utility equipment problems become the responsibility of the owner of that part of the system in which the problem occurred, certainly not always NTPC.

Figure 9

Causes of Outages (Yellowknife) 2007	
	Number
NTPC equipment failures	11
NUL-YK equipment failures	25
Failures caused by customer	7
Act of God	16
Planned outages	27
Unknown causes	12
Total	98

Source: Northland Utilities (YK) Ltd.

This sort of crude representation does not signal direct comparability between NTPC and NUL in Yellowknife because of the different responsibilities that each company has, and the differing factors that weigh upon generation/transmission (NTPC) as well as distribution (NUL-YK). What these figures do show, is that, when the power goes out in Yellowknife, the predominant attribution of outages to NTPC is unjustified.

Back-up capacity: Each of the Corporation’s generating facilities, including the hydro plants, has diesel back-up plants for use during emergency interruptions (or during peaking).

In Yellowknife, for example, the Jackfish diesel plant stands by in case of problems with hydro generation from the Snare-Bluefish system. In the case of a problem at the dam site, the generating station, transmission lines or other related equipment, the back-up plant can serve to meet demand.

In smaller communities, back-up capacity is facilitated by NTPC having extra diesel engines usually in the same building as the primary plant. Available back-up capacity is set relative to average demand requirements under normal operating conditions. In the rare case of a plant fire, the Corporation has portable back-up units that can be transported to a community (depending on weather), and staff can usually have power restored quickly.

Back-up plants receive a different level of maintenance attention than primary plants because they do not run as long or as frequently: they are there to be used if problems arise. However, they do have to meet minimum operating and maintenance standards and are thus tested periodically. In a recent case of an outage in Fort Smith, the back-up generators proved difficult to start, resulting in a longer black out period than the Corporation initially forecast.

NTPC’s remote plants contain multiple engines. The primary engine is often the newest and most efficient. NTPC policy dictates that back-up units must have output capacity that exceeds that of the primary unit, and meets a 110 percent capacity standard. So, if a 1000 kWh primary engine goes down, the back-up engines (often of individually lower capacity) should collectively be able to provide 110 percent of the maximum expected load demand. Based on analysis of existing NTPC back-up capacity, the Panel confirms that the current back-up system is adequate to meet this 110 percent threshold. The Corporation’s back-up capacity meets industry standards.

The total cost of the back-up system is not readily available and estimating the cost of maintaining back-up capabilities would be a tenuous exercise given all of the regular operating costs that are also drawn upon during an emergency (such as fuel or technical knowledge). Based upon our professional experience and knowledge, we can speak to the cost of not having back-up capabilities. The consequences of not having back-up generators, especially during extreme northern weather, would be severe. It is not an exaggeration to say that the cost of no

back-up could be lives lost. Despite justifiable concerns about high power prices, the public should be re-assured that the Corporation has back-up capacity. It also must be realized that back-up capacity costs money. Even if alternative energy technologies are introduced in the future to replace primary diesel generation, communities will still need back-up capacity - and reliable back-up capacity would still likely come from diesel generation.

Conclusions: The Panel concludes that NTPC is a reliable power provider. NTPC is at or close to the top of Canadian remote diesel plant operators in terms of reliability; hydro generation is also reasonably reliable. Transmission reliability seems to be high notwithstanding that there are many extraneous factors that can affect lines, including inclement weather and other factors that most people would consider beyond the immediate control of a hydro generator with many kilometres of transmission lines over harsh terrain. The Corporation has installed modern automated control systems to remotely monitor generation, coupled with a thorough preventative maintenance program. NTPC's outage statistics usually meet or exceed industry standards and comparable measures. Perhaps most importantly for a northern power company, NTPC has the back-up capacity in place to meet the necessary back-up threshold.

Environmental Protection and Safety

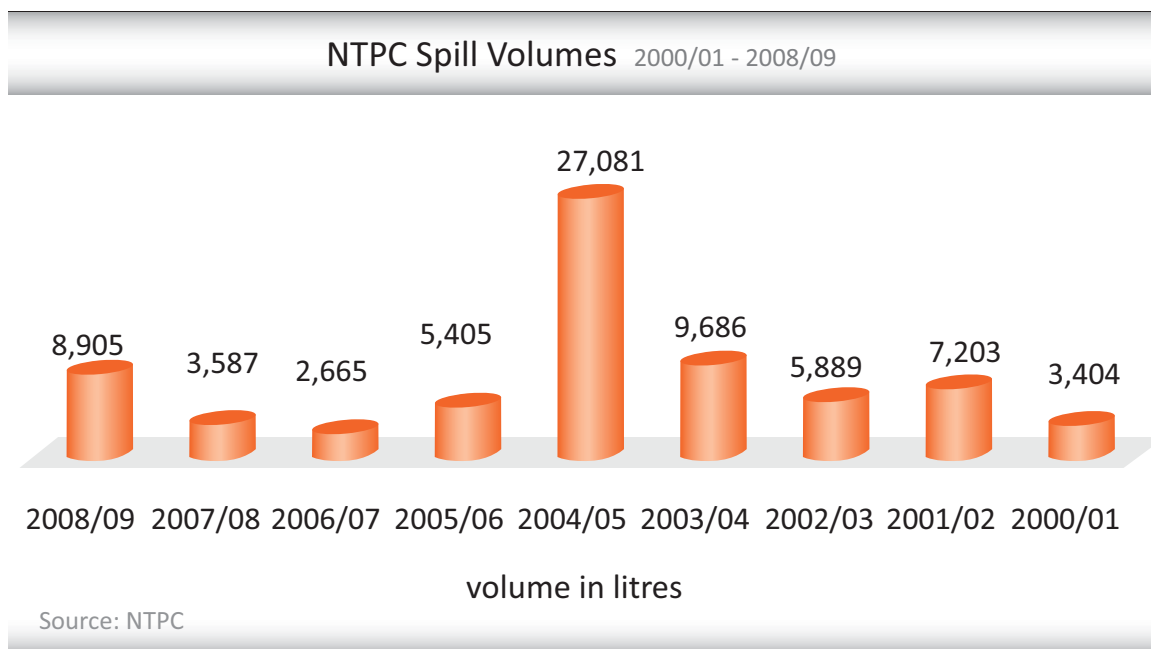
The Panel considered the Corporation's handling of environmental issues in two ways, those that have an immediate impact such as spills and contaminated sites, and those that result in longer term impacts such as greenhouse gas emissions. Elsewhere in this Report are specific discussions of environmentally-related issues such as the use of residual heat, energy conservation, and alternative energy technologies. The Panel sought to understand NTPC's general approach to environmental protection, judge the reasonableness of the Corporation's approach based upon comparative indicators and resultant outcomes, and determine how environmental protection goals and the pursuit of those goals may or may not affect NTPC's operations.

The other aspect of NTPC's operations addressed in this section of the Report is the issue of safety. Knowledge about the safety of NTPC's operations may reveal insight into the Corporation's approach to employment, cost management, image, and its overall business ethic. Safety issues were examined by looking at the safety record of the Corporation in recent years, and contrasting that record with the Corporation's own policies as well as the records and policies of other utility companies.

Prevention of spills: Part of the mission statement of NTPC is to maintain facilities at a high environmental standard and to ensure a sustainable environment. Spill prevention and response planning is addressed through at least seven NTPC policy and planning documents, including rulebooks, manuals, and specific procedural instructions. Recent examples and statistics cause one to question whether NTPC is adequately meeting the standards to which it aspires.

Statistical comparisons paint an unfavourable picture. According to information presented in NTPC annual reports as well as in performance measurement data, hazardous spill volumes had been declining in recent years reaching a low of 2665 litres in 2006-2007. The Corporation reports that three hazardous material spills occurred in 2008-2009, one of which accounted for most of the spill volume; the total spill volume during 2008-2009 was over 8,000 litres, which is considerably higher than volumes in recent years.

Figure 10



High spill volumes are particularly puzzling in light of the fact that, since December 2005, the Department of Public Works of the GNWT has provided NTPC with all required fuel volumes and all required tank farm maintenance under the Fuel Management Services Agreement. Where the GNWT causes any fuel spill performing the duties set out under this Agreement, the GNWT contains and cleans-up the spill at its own expense. PPD notes that the spills attributable to PPD are 445 litres (diesel fuel only), some 2.3 percent of the spills recorded by NTPC. NTPC’s spills include lube oil, glycol, and other deleterious substances.

According to a comparative survey of Canadian diesel utilities completed in late 2006, the number of spills and total spill volume attributed to NTPC is considerably higher than comparative utilities, such as Hydro Quebec or Manitoba Hydro. A poor comparative record is evident given that all six diesel utilities in the study showed total spill volumes under 1000 litres (for the single year under study) - in that same year, NTPC reported 5405 litres spilled. The 2006 survey is an imperfect measure of NTPC’s spill prevention success because the results only represent point in time data and are not calibrated against the volume of hazardous materials handled. Nonetheless, the results do not compare favourably against NTPC’s environmental mission statement.

Remediation of spills: Fuel spills do happen at power plants and tank farms. According to NTPC policy and following regulations, all spills of hazardous materials over five litres must be reported through a 24-hour hotline. The Corporation remediates spills under the watchful eye of the PUB and the GNWT, and all spills must be cleaned up to the satisfaction of regulators. NTPC sets aside an annual budget of approximately \$500,000 for environmental issues including spills remediation, both old and new. We believe that this budgeted amount should be sufficient, particularly given that the GNWT’s Petroleum Products Division has the main responsibility for fuel handling and storage.

Contaminated sites: Contaminated sites are prevalent across the North. The Treasury Board of Canada lists over 1000 contaminated sites in the NWT alone, many of them at abandoned mines, former military bases, and old power facilities.

In each of the past three years, NTPC annual reports have stated: “NTPC estimates that it would cost approximately \$13,000,000 to clean-up the environmentally contaminated soil at its 27 sites in the NWT. NTPC has recognized a provision for environmental liabilities of \$3,240,000 for the portion of the remediation costs which it believes it is responsible for based on its analysis of the amount of soil impacted before and after the acquisition of the sites by NTPC on May 5, 1988 from the Northern Canada Power Commission.” For many years there have been discussions as to who has remediation responsibility for sites inherited from NCP.

Plant site remediation starts when a plant is decommissioned and a new one constructed, starting with removal of tanks and equipment from the site, which is then used for storage and other corporate operations. Physical remediation starts when the site is no longer used by NTPC.

NTPC contaminated sites processes generally reflect national standards. The physical remediation process contains four parts starting with affected community consultation through the final step of remediation. A major determining factor in this process is site assessment. There are three levels of site assessment (or 'ESA'): Phase I is a desktop study; Phase II requires a site visit and soil and/or groundwater sampling; Phase III is a study that requires a site visit and more detailed sampling to determine a complete delineation of impacts. The Corporation considers remediation completed when the applicable regulator confirms in writing that NTPC has satisfactorily completed its work to current criteria.

Phase II and/or III ESAs have been completed for all impacted sites. Phase III ESAs will be completed in 2009 at the Wrigley, Nahanni Butte, and Fort Simpson sites. Other sites requiring Phase III ESAs include Fort Good Hope, Uluhaktok (Holman), Norman Wells, and Paulatuk.

Once NTPC has identified contamination, its goal is to deal with the problem in a cost effective manner, including sometimes not taking immediate action pending new clean-up technologies become available. This also allows NTPC to manage its debt level. Spills that occur offsite (on non NTPC property) are dealt with when they are identified. Costs are minimized by delaying remediation on NTPC's property until new technologies and new remediation facilities are developed.

This overall policy framework prioritizes cost of clean-up and the delineation of appropriate responsibility for the cost of clean-up over environmental protection.

Greenhouse gas reductions: Greenhouse gas (GHG) emissions are a major cause of global climate change. NTPC has shown considerable achievement in reducing GHG emissions. The Corporation voluntarily submits an annual report on greenhouse gas emissions to the Canadian GHG Challenge Registry as well as to the National Pollutant Release Inventory under Environment Canada.

In a 2007-2008 NTPC report on GHG emissions, the Corporation details its operational activities, analyses GHG outputs by generation method, and discloses its emissions of CO₂ which totalled 72,228 tonnes, down by almost 50 percent from 1990-91 levels, but increased by 12 percent since 2000-2001. The Corporation's decreases in GHG emissions from 1990 levels are considerable, especially when placed in contrast against Canada's overall emission record: between 1990-2006 Canada's overall GHG emissions rose 22 percent while, during the same time period, emissions from the electricity sector also rose 22 percent.

Changes in GHG emissions are caused by several variables. For example, GHG emission increases may occur when water levels needed for optimum hydro generation are low and thus increased diesel output is required to meet power demands; but GHG emission reductions can result from investing in more fuel efficient engines. Two major contributing factors in GHG output are demand and generation type. It is difficult to accurately speak to fluctuations in demand in the NWT because, although the NWT population has declined over the past two decades, individual power consumption may have increased due to the more widespread use of new appliances and electronic devices such as computers.

In 1990-1991, 37 percent of total NTPC generation came from diesel generated power (excluding Nunavut); in 2007-2008, diesel generated power accounted for only 18 percent of total power generation (and this figure excludes reductions caused by the division of the NWT in 1999). Some GHG reductions have been caused by the GNWT's overall investment in generating power from hydro electricity, but that should not diminish the significant accomplishments in emissions reductions made by NTPC.

Health and safety: NTPC appears to enjoy a positive reputation on issues of safety. In surveys of NWT residential customers undertaken annually for NTPC, every year respondents reflect most positively on NTPC's concern

for public safety. Moreover, on issues such as health and safety or commitment to professionalism the Panel regularly heard that NTPC – and in particular field operations staff – rated highly on these issues.

Over the past few years, the Corporation has shown a significant improvement in accident and incident statistics. For example, in 1997 there were 40 work-place incidents requiring medical attention and by 2007 this figure had declined to three. There has also been a reduction in the number of lost-time injuries over the past 10 years from a single year high of 5 injuries (2003) to three consecutive years (2004-2006) without any lost-time injuries. Zero lost-time injuries is a significant accomplishment in any industry. However, there has been an increase in lost-time accidents in the past two years, and a contractor’s employee working at NTPC’s Snare hydro facility experienced very serious injury during the summer of 2008.

Perhaps the best measure of safety is the industry standard of severity, measured using days lost due to accidents. Days lost by NTPC employees over the past ten years have fluctuated considerably and demonstrate no discernable pattern. In 2007, NTPC experienced 55 days lost due to injury; by comparison, during the same year, BC Hydro experienced 31.4 days lost due to injury (for every 200,000 hours worked).

NTPC pursues safety for the public, employees, and contractors, through training and instruction. NTPC policy explicitly places health and safety as paramount and zero accidents as the goal. Job site risks are evaluated and hazard-level procedures are in place. Contractors are responsible for meeting or exceeding NTPC policies and procedures on safety. NTPC policy assigns most safety-related job planning processes to managers and supervisors, and workers are actively involved in making sure that they follow the rules. The more detailed NTPC Safety Rulebook is revised regularly, and was most recently updated in April 2009.

Conclusions: We conclude that NTPC’s safety policies and procedures rate among the best we have seen. In the health and safety field, most companies, including NTPC, strive for a zero harm record. The Corporation reached this record for three consecutive years, but recently has not achieved its objective. For an organization that uses specialist consultants/contractors, as NTPC does, there is the added obligation to ensure that consultants and contract employees are trained, briefed and supervised at the highest level of health and safety. A culture of safety requires more than procedures and manuals, it also requires vigorous adherence to the promotion and implementation of a safe and healthy work place at all levels of the Corporation.

NTPC’s record on environmental protection is mixed. The Corporation’s greenhouse gas emission reductions represent a significant achievement. On the issue of contaminated sites, it appears that the Corporation has assessed its sites and is taking remedial action subject to regulatory scrutiny. The record of NTPC on fuel spills points to a serious need for improvement.

Recommendations concerning Operational Efficiency

1. NTPC should engage external specialists in a thorough review of its fuel handling programs.
2. NTPC should engage external specialists in a thorough review of its safety programs and culture.

Corporate Efficiency

Finances

This section of our Report largely deals with issues of finance and accounting. We realize that some issues of finance and accounting can be difficult to understand. As far as possible, without compromising accuracy, we have used lay terms and tried to avoid technical descriptions. We believe it is important for readers to persevere and read this section, because it provides considerable insight into the financial workings and status of the Corporation. Given that cost efficiencies and electricity prices are of serious concern to NWT residents, the financial health of NTPC is vital to our understanding of the system as a whole.

We heard several people ask, why, if the Corporation has made millions of dollars in profits over the past 20 years, do power rates continue to increase? The answer is complex, but results from increases in the cost of inputs such as fuel, inflationary and wage increases, and government policy that results in a dividend paid to the GNWT.

Ownership: The Government of Canada sold the old NCPC to the GNWT for \$53 million which took over the funding of the Territorial Power Support Program (TPSP), previously funded by the federal government. The GNWT recovered the \$53 million from NTPC in 10 instalments, meaning that NTPC paid for itself. All of NTPC’s common shares are held by the NT Hydro Corporation; the GNWT holds one preferred share, which allows the GNWT to collect dividends directly from NTPC. All the share capital of the NT Hydro Corporation is held by the GNWT. The bottom line is that the GNWT owns 100 percent of NTPC.

Profits: The profit history of NTPC was obtained from its audited financial statements, which are public documents filed annually in the Legislative Assembly. The following table shows retained earnings (i.e., profits) as well as other key financial information from the past five years (end March 31, 2009).

Figure 11

NTPC Earnings and Dividends 2005-2009 (\$ 000)			
Year	NTPC Net Earning	Dividends Paid	NTPC Retained Earnings
2009	7,201	4,350	2,851
2008	9,003	4,300	4,703
2007	6,445	3,500	2,945
2006	7,192	3,500	3,692
2005	6,428	3,300	3,128

* Includes \$850 to NT Hydro Corporation in 2009 and \$800 in 2008.
Source: NTPC

Retained earnings are the profits left to a company to provide it with a resource base for investments in new assets and for operating purposes. Most businesses strive for a mix of returns to the shareholder through dividends, and retained earnings in order to ensure the future financial strength of the company.

During this five year period (2005-2009), operating revenue (essentially sales of power at PUB-approved rates) has risen from \$68 million to \$84 million; this represents an increase over five years of 16 percent, or, on average, 3.2 percent annually. NTPC also billed a further \$16.7 million through rate riders, also approved by the PUB, to cover specific costs.

Dividends: The GNWT owns NTPC. This is an important fact to recall. As owners, the GNWT receives the payment of an annual dividend. This is, put simply, a financial return on its investment.

Figure 12

Dividend Paid to GNWT by NTPC 2002-2009	
Year	Dividend (\$000)
2009	4350
2008	4300
2007	3500
2006	3500
2005	3300
2004	3500
2003	4000
2002	4000
Total	30,450

Source: NTPC

Between 1989 and 2001, the shareholders, (the Government of the Northwest Territories, including Nunavut) drew almost \$54 million in dividends from the Corporation. Since division, the GNWT has drawn dividends of over \$30 million.

Rate regulated accounting: The normal basis for corporate accounting and financial reporting in Canada is Generally Accepted Accounting Principles (known as GAAP), a set of rules established by Canada’s accounting bodies and used by most companies. If companies don’t follow these rules, company auditors will “qualify” their reports. This is usually a black mark that attracts negative attention from creditors, lenders and investors.

Regulated utility companies use a modified set of accounting rules known as rate regulated accounting. The use of this alternative accounting method happens under the direction of the regulators (in this case, the NWT PUB). The accounting profession as a whole has yet to provide guidance on how to harmonize the Rate Regulated system with GAAP.

When a non-regulated company has cost increases, it can usually raise its sale prices to cover costs incurred (i.e., until customers reach their maximum tolerance for paying more). A useful and recognizable comparison is a non-regulated oil company which buys bulk oil at world market prices and then quickly raises rates at the pump to charge customers for any increased prices that it has to pay.

The PUB does not allow NTPC to charge rate payers with some costs normally expensed each year under GAAP until sometime in the future (at the discretion of the regulator), and under strict conditions. The rate regulated system takes all this into account.

Regulated utilities do not have this discretion. They must apply for a rate rider from the PUB, in order to temporarily recover extra costs for a certain period of time.

Normal GAAP rules: The GAAP method is different. Under the GAAP system, a company is required to account for costs incurred in a particular accounting period through its income statement or as capitalized assets. Some items purchased in the accounting year or other costs legally charged for that year are not paid in cash until some future time, often after the end of an accounting period. In some cases, actual payment could be years into the future, even though the costs are still accounted for during the period that the expense occurred.

Accounting for retirement benefits is a good example to explain how this works. Many companies pay retirement benefits when their employees retire. The cash does not go out until the employee retires, but each year that the employee works for the company part of the ultimate payout has been earned and the business incurs a cost for that year.

Under GAAP, the company ‘accrues’ that annual cost and increases it each year until the employee retires. When the actual payment is made, the money has been ‘set aside’, in an accounting sense, so that profits during the payout year do not take a big hit.

Under the rate regulated system the annual cost accrued may not be allowed by a regulator until it is paid in cash when the employee retires. Costs are deferred until the regulator allows the company to recover them, and at that point include the expense in its rate base. In other words, the regulated company only includes in its income statement, those costs that the PUB will allow in that year’s rates, or costs that it will not allow at all.

Impact on NTPC’s financial statements: NTPC’s financial statements explain how the Corporation’s statements differ because of the use of rate regulated accounting, and what the differences mean to the reported financial results. In particular it describes regulatory assets, and what makes up such assets. Regulatory assets are costs not yet expensed by NTPC. The Panel encourages readers obtain and read the Corporation’s 2009 annual report, which includes its audited financial statements.

Regulatory assets currently total \$22 million. These will be chargeable to rate payers in the future. The notes to the financial statements describe eight types of regulatory assets, and each one describes how the impact of rate regulation for that item has affected net income in the year. In total, these deferred costs have increased by \$7.5 million in 2009, costs that would have already been expensed under GAAP. NTPC has not had a chance to charge these costs to customers because its rates are regulated and already set for the year.

The reported net income for NTPC in 2009 (period ending March 31) was \$7,201 million. The rate regulated accounting used to arrive at this figure, while complicated, is not misleading - it matches costs with the revenues permitted by the PUB.

If NTPC were not rate regulated, it would have had to try to increase rates during the year when particular costs were incurred or suffer a decline in profit.

In a non-regulated environment, the ability of a company to pass increased costs on to its customers often depends on what the market will bear. At some point, customer resistance will lead to lower sales and profits would suffer.

Looking at this in the context of NTPC, if the PUB did not set rates, a major price shock could have occurred. What this would have done to power sales is hard to say. But, as it stands, rate payers will still be faced with paying up to \$22 million more in the future for deferred costs, at the discretion of the PUB.

Debt / equity ratio: Section 25 of the *Northwest Territories Power Corporation Act*, requires that the Corporation’s borrowings do not exceed three times paid up capital and retained earnings (i.e., equity). At 31 March 2009, NTPC’s consolidated equity was \$99 million, and thus within the legislated 75:25 ratio. NTPC’s 2009 debt to equity ratio is 57:43. NTPC’s debt to equity ratio is similar to that held by other Canadian public sector utilities; for example, Yukon Energy Corporation holds a ratio of 60:40 (figures dated 2008).

Conclusions: The Panel concludes that the financial condition of the Corporation is acceptable given the requirements of the legislation, oversight from the PUB, and the clean auditor’s report from the Auditor General.

Capital Assets

A utility corporation such as NTPC has to make large investments in engines, plants, equipment, dams, generators, distribution and transmission lines, and many other infrastructure components in order to reliably generate and transmit power to customers. Major capital assets are strictly regulated by the PUB. The treatment of smaller capital assets, such as engines, is discussed at greater length in the sections on generation and reliability. The purpose of this section is simply to describe how NTPC approaches capital asset management and gauge the reasonableness of this approach.

Life cycle: Capital assets have a limited life span, after which they wear out, spare parts are hard to get, or they becomes too expensive to operate. At this stage in an asset's life-cycle, it is less expensive to replace it than to fix it. Every asset does not wear out at the same rate: diesel engines last for about 90,000 running hours, plants for roughly 40 years, and dams can last for up to 100 years. The expected useful life of each type of equipment is well known in the utility industry and the value is depreciated accordingly.

To illustrate, a utility truck in the North, where there is rough terrain and harsh climate, might last for a few years on average. Its life cycle may be limited even though it does not travel many kilometres. A \$60,000 truck loses its value by roughly \$7,000 to \$8,000 each year (or more depending on use). Accountants used to call this loss of value depreciation, but a more modern term is amortization. At the end of its useful life, the Corporation would have to replace the truck with a new one. Fixed capital assets such as power plants and dams usually last for long periods of time, but they too eventually wear out.

People might think that their rate payments have paid for trucks, plants, generation equipment, etc., and wonder why their rates don't go down now they have paid for all of the assets. At the end of the life of an asset, the cycle starts over again with new purchases. All of the equipment required to responsibly operate a utility company will eventually need to be replaced.

The Corporation categorizes its capital assets into about half a dozen groups, based on similarities in expected life. Each group is amortized annually at rates approved by the PUB and the amortization is included in the income statement and rates charged to customers.

Planning process: With an extensive and expensive portfolio of capital assets used in the generation and distribution of power, and spread over 33 communities, the Corporation has to carefully plan its capital spending.

NTPC keeps detailed records of the assets it owns or leases, when they were purchased, and what is their expected life, plus maintenance records.

Capital asset replacement plans are created by the engineering department, where staff know the age and condition of assets and thus when those assets will need to be replaced or modernized. Capital planning spans five-year periods, although detailed budgets are examined annually.

The Board of Directors examines and approves the capital plans. The Board of Directors has an outside expert advisor who is well qualified to review and advise the Board on engineering capital projects. The PUB also must examine and approve capital plans.

Cost estimates and project scope do not appear to be as well planned as one could reasonably expect. For example, with the Snare Rapids Upgrade, the original budget was targeted at \$4.92 million, but eight years later expenditures had risen to \$9.5 million. The first 5 years of work consumed most of the original budget. Better scoping at the outset should have allowed for, among other reasonable projections, a better estimate of the condition of the facility and its parts.

Unforeseen costs, such as unexpected engine repair, would not be included in the GRA process and is deferred until the PUB allows the cost to be reflected in rates. This is another function of rate regulated accounting. If actual costs in a particular year are higher due to unforeseen circumstances, the amount over the original estimate is deferred until the PUB allows it to be included in a rate rider.

Net book value: At 31 March 2009, the Corporation had capital assets on its books (including those projects still under construction) costing \$352 million. The net book value (i.e., unamortized) was \$262 million. The unamortized value represents the years of useful life, in monetary terms, left in the assets.

The net book value is of critical importance to certain policy debates, such as alternative energy proposals. If there were any plan to replace existing capital assets with newly emerging technologies, this would leave someone - either the government or rate payers - on the hook to pay for the cost of unamortized assets.

Conclusions: The Corporation's decisions on when to replace capital assets are dependent on the original anticipated useful life of a particular asset, and the net book value, in monetary terms, of its remaining useful life. NTPC has an annual capital spending maximum target (or spending cap) ,approved by the Board of Directors, that is approximately \$19 million annually. As noted, this cap is a product of the financial capacity of the Corporation to borrow within the legislated debt/equity ratio. The Panel concludes that the Corporation has done an appropriate job of managing its capital assets from acquisition through use to obsolescence. This conclusion is not only derived from the process employed by the Corporation, but also from our observations in other management areas such as maintenance and repairs, engine fuel consumption rates, and overall reliability. However, there is room for improvement in capital project scoping and cost estimation.

Corporate financing

An asset intensive company like NTPC needs money to buy and maintain the equipment used in its operations, plus working capital to buy inventory, carry accounts receivable, and pay for deferred costs where the Corporation will not recover money until the PUB approves requested rate riders. Working capital can come from several sources, including retained earnings, shareholder investments, accounts payable, and short-term borrowings from banks and/or others. Capital assets also need to be financed, usually on a longer-term basis by borrowings in the capital markets. This section of the Report examines NTPC's handling of these issues and assesses any impacts on its overall operations.

Capital borrowings and repayments: When NTPC buys or constructs new assets, it needs cash to pay for them. Because NTPC does not have large amounts of cash available, it borrows from lenders in the financial markets. Borrowing is expensive. Lenders charge both interest and fees. At its 2009 year end, the Corporation had long term and short term debts of about \$185 million, less sinking fund investments of \$28 million.

Long term financing is guaranteed by the GNWT and forms part of the government's debt cap. The debt cap is a statutory limit set out by the federal government in the *Northwest Territories Act*. The cumulative borrowings of the GNWT cannot exceed a certain amount, which is currently set at \$500 million. This includes borrowings guaranteed by the GNWT for the Corporation.

Short term borrowings are mostly bank acceptances to cover day-to-day financial needs and these can vary significantly depending on collections and the timing of expense payments. From time to time, the Corporation may have temporary cash surpluses and these are invested in short term markets to obtain a return.

Long-term borrowings and repayments: The Corporation borrows a set amount to be paid back at a pre-determined time and at defined interest rates. In 2009, the Corporation borrowed long-term funds of \$25 million for various projects and paid back \$21 million as it became due. It redeemed a similar amount from its sinking funds investments to make the repayments.

The 2009 financial statements of NTPC contain a consolidated cash flow statement that summarizes the cash transaction of the Corporation for the year. The Corporation's cash on hand at 31 March 2009 increased over the year from \$689,000 to \$6,327,000. The statement explains the sources of cash and how NTPC has used it during the year. For example, accounts receivable have decreased by \$7.5 million; this means that the Corporation has collected on customers' bills more promptly. The Corporation has provided for \$248,000 of receivables that may be uncollectible.

Bad debts written off during the year totalled \$106,824; these are detailed by community and by customer in a schedule of write-offs attached to the accounts. The bad debts provision and the amount actually written off represent about 0.125 percent of billings, $\frac{1}{8}$ of 1 percent.

NTPC has to manage its cash appropriately. Borrowing is expensive, but so is having unused cash sitting around not earning income or not paying down other debts to save interest costs. The Corporation has a treasury function that manages cash flows (incoming from power sales, etc., and outgoing from payment of bills and

payroll, debt repayments, etc). For further information on how the Corporation collected and used its cash in 2009, we recommend that readers refer to the 2009 audited financial statements.

Sinking funds: The Corporation sets aside money regularly into sinking funds to pay off long term debts when they become due. This helps to avoid a huge drawdown on its cash at repayment time. These monies are invested and called “sinking fund investments,” which are cashed in when the related debt has to be paid off. Sinking fund investments are in securities and earn capital growth as share and bonds prices rise (or the opposite in tough times), plus interest and dividends. Sinking fund investments are subject to the same risks that any investments face, and can go up and down with changes in market prices. Sinking Fund monies are put into types of investments that are approved by the Board of Directors against acceptable market risks.

Notes 9, 11 and 13 of the 2009 audited financial statements give more details about the amounts and type of debts outstanding.

Interest costs: In 2009, the Corporation paid almost \$14.4 million of interest on borrowings, offset partially by \$2.6 million received on sinking fund investments, and \$900k capitalized as funds used during construction of new assets . It earned just under \$1 million on its own investments. Interest on money borrowed by NTPC to buy assets, as well as interest on short term borrowings, along with the depreciation and maintenance costs are business expenses. These are business expenses in the same way as fuel and lubricants used to operate equipment are business expenses.

Conclusions: Even with market volatility in the past year or so, the Corporation appears to have adequately managed its cash flows and debt loads. As noted, the original architects of the *Northwest Territories Power Corporation Act* foresaw the need for borrowing; they set a debt limit of no more than three times the Corporation’s equity, including retained earnings. The Corporation has stayed within this limit.

Business Management

NTPC governs its business activities according to an established set of policies and procedures. This section of the Report deals with those policies mostly of an administrative nature. The Panel could not and did not see the value in an examination of every corporate management practice. It focused its study upon those areas where costs are highest, and where the Panel had heard criticisms about NTPC practices. Two areas attracted particular interest: procurement and employee travel. The area of procurement is one of high cost for a utility company, particularly because expensive items such as power poles and engines are an essential part of field operations. We sought to examine NTPC procurement policies and their costs. In the area of employee travel, we explored the validity of an oft-heard complaint: NTPC employees travel too frequently, unnecessarily, and at expensive rates. Our purpose was to shed light on the reasons for and costs of actual NTPC business management practices.

Internal policies: Any sophisticated entity needs rules under which its people operate. This is especially true of a government-owned utility that must balance the risks and complexity of the utility industry with the business of government operations. Over the years, the Corporation has developed an extensive suite of policies to guide management and staff in day-to-day operations. NTPC policies are internal documents that are not generally circulated outside of the Corporation. The policies are based on legislation, directives from government, and business sense. They cover a wide range of functions that include Safety, Senior Management Pay, Requests for Information, and a Code of Ethics. An NTPC index shows over 75 policies covering 10 different areas. These policies date back to 1990; many have been frequently updated, including one that was updated as recently as September 2009. Based on our knowledge of the operation of government-owned utility companies, it is our view that the current policy suite guiding NTPC serves as a solid framework for operations.

Purchasing goods and services: The Corporation has a fully developed purchasing policy that outlines procedures to be followed by staff for all acquisitions. The policy is included in its Procurement Manual. The policy

references all considerations appropriate to a northern Crown Corporation, including tendering procedures, signing authority, northern procurement and a Business Incentive Policy (BIP). All GNWT departments and GNWT-owned entities are subject to BIP. The BIP used by NTPC is designed to recognize the higher costs of doing business in the North, and is intended to encourage northern businesses to compete and grow. The policy allows for the Corporation to pay northern suppliers a premium price to support northern-based businesses or even southern-based businesses with sufficient northern operations. NTPC does not track the extra costs it pays as a result of the BIP.

The NTPC policy excludes purchases of diesel and gas gen-sets (engines) as well as fuel and lubricants from northern procurement rules. As was explained in the Fuel section of this Report, NTPC buys most of its fuel from the GNWT Petroleum Products Division.

Project management: NTPC purchased the Bluefish dam and generating facilities from Miramar in late 2002 for about \$13 million. The dam was quite old, having been constructed in the period between 1937 and 1942, although it was still fully operational. When NTPC purchased the dam it agreed to let Miramar continue to draw power until its scheduled closing in 2004, whereupon it would become a fully functioning asset for the Yellowknife grid.

The purchase, as a clean source of hydro power, made strategic sense to NTPC. NTPC notified the PUB in its application for purchase approval. The due diligence review included:

- Visual inspection of the station
- Underwater inspection and condition assessment of the equipment, including:
 - Inspection of geo-technical aspects of the facility
 - Electrical equipment
 - Hydraulic conveyance structures
 - Turbines
 - Generators, plus
 - Review of operations.

Also included was an environmental review, a review of government records, environmental assessment, and summary of licences in place. This process showed the facility to be in acceptable condition, although some repairs would be needed in the near term to bring the facility up to NTPC's operating standards. The necessary capital improvements that NTPC foresaw were estimated to be \$1.84 million.

In the approval request, NTPC argued that, apart from the request to include the \$13.5 million purchase price (plus overhead costs of another \$0.61 million) in its rate base, some \$8.7 million would be required to rebuild the older plant and dam/spillway within the next fifteen years.

The PUB approved the application.

Given the condition of the dam, the Corporation recognized the limited remaining life risk in buying it. Management relied on assessments by external experts.

The dam has deteriorated more quickly than anticipated. The old dam cannot be saved or repaired. A new dam must be built. The approval process for a new dam is not simple: it involves the federal Department of Fisheries and Oceans, Indian and Northern Affairs Canada, and the Mackenzie Valley Land and Water Board (MVLWB), plus approvals from local Aboriginal groups. The permits required include water licences, land use permits, land leases and ice road approvals.

The Corporation tells us that it has been in discussion on a regular basis, both informally and formally with the Board and departments, plus aboriginal interests since 2008 when the problem with the dam was first identified, and that all the parties have been to the site.

The Corporation declared an emergency in 2008, allowing some work to begin. The regulator agreed and allowed the work to proceed. There was, however, a misunderstanding between NTPC and the MVLWB over what the Board’s approval covered.

Inventory: In addition to fuel purchased into inventory, the Corporation also carries about \$6.2 million in inventory of spare parts. Below is a table that breaks down these costs into sub-categories.

Figure 13

NTPC Inventory Costs	
Inventory Type	Cost (\$ million)
Engines and critical engine spares	2.1
Distribution and transmission spares	2.4
Hydro spares	0.4
IT spares	0.6
Miscellaneous	0.7
Total	6.2

Source: NTPC

Generally speaking, the inventory is made up of a combination of critical spare parts and large items such as power poles. Certain of the types of inventory are slow moving, but are necessary to repair older engines and equipment where supplies are scarce and expensive. Other items are faster moving but equally critical, such as power poles, where the unavailability of one item would seriously impede repair efforts if the original item was damaged or lost. The Corporation carries about 3,000 items over 28 plants. A new inventory system is being introduced to track the turnover of parts and manage inventory levels against minimum/maximum levels.

Corporate travel: When there is an outage at a location without permanent repair staff, maintenance crews have to fly in from where they are based, which is usually from the closest regional centre or sometimes from the head office in Hay River. Most senior managers are based in Hay River and thus sometimes have to travel to meetings in Yellowknife or other NWT communities.

During the course of our study, the Panel heard criticism that NTPC staff were travelling unnecessarily, going to places for purposes other than business, and staying in expensive accommodations above the quality needed to adequately do the job. Management denied this claim. The Panel examined this criticism in light of actual NTPC travel policies and practices.

The Corporation has a policy on staff travel, originally developed in 1980 and updated five times since then. The policy requires staff to travel economically: air travel has to be at economy fares or cheaper excursion fares where they are available, for only the most direct route. Similar rules apply to train and vehicle travel. Accommodation must be in standard hotel rooms or in rooms where cheaper government rates are available. Meal costs are similar to the GNWT rates; modest entertainment is permitted where required for the maintenance of good business relationships.

The Corporation also has a five-page travel procedure that sets out how the policy is administered and how the traveller obtains approvals, completes travel claims, etc.

Overall, NTPC’s travel policy is similar to that in place for the territorial and federal government. When compared with government travel rules, the policy and procedures appear fair and reasonable.

It is also important to consider how the policy is being applied.

The 2009 audited financial statements of NTPC show travel and accommodation costs of \$2,617,000. In the year ended 31 March 2009, travel and accommodation for mandatory and discretionary training totalled \$333,000. In the past 12 months, NTPC staff made about 1,750 trips resulting in travel claims (some claims can include more than one trip). Ninety-five of these trips were for staff training purposes. Staff took twelve trips out of Canada, 10 of which were for professional development courses/conferences that were not otherwise available in Canada; 2 trips were made to the United States to inspect an engine before the Corporation purchased it. These trips were approved in advance by the President and CEO. Since 1 April 2009, and up to the time of writing this report, two employees went to Sweden to receive training on the maintenance of Wartsila engines. All out-of-country travel must be approved in advance by the CEO.

Total travel costs in 2008/09 increased by 19 percent over the previous year. Part of the reason for this was due to two unsuccessful hiring attempts out of Inuvik, requiring Hay River staff to rotate through Inuvik to fill a critical employment gap. The high forest fire season also caused more activity than usual at NWT hydro sites. Aircraft charters cost \$591,000, up 2 ½ percent from the previous year.

Medical travel, accommodation and meals cost \$203,000 in the year. Medical travel is approved by the NTPC human resources department.

Staff travel requires that supervisors pre-approve trips and conduct a post-trip review of expenses. This excludes senior management, who do not need either pre-approval or post-trip reviews performed. Travel by senior managers is carried out on a trust basis; they approve their own travel claims. Management travel is discussed at weekly management meetings and the travel is usually for short trips.

The internal auditor reviewed about 50 percent of the 2008/09 claims and uncovered 545 minor errors to be corrected. Procedural errors are referred to managers or directors for correction. Any identified overpayments resulting from travel claims are collected from the employees. The Corporation said that it had recovered about \$2000 in overpayments from travel claims, most of these overpayments being small items that had been claimed in error.

Conclusions: NTPC has developed a comprehensive framework of policies and procedures to guide staff in the management of their responsibilities. The purchasing function follows the GNWT model for northern preference (BIP), which the Panel agrees is a useful and necessary tool for developing northern businesses. The inventory level is reasonable and thought out strategically; the planned new tracking system with predetermined minimum and maximum inventory levels will be useful in better controlling costs.

NTPC's handling of the Bluefish project calls into question the Corporation's relationship and project management capabilities.

The Corporate travel policy is appropriate for NTPC and in the same spirit as that of the GNWT, but supervisory controls over travel and related claims need to be more focussed.

People

People are the backbone of organizations like NTPC. Their skills are highly important, and the way they are supervised and managed is critical. NTPC's employees include unionized staff, salaried non-unionized staff, middle management, and senior management; in addition to this regular complement of people, are contractors, consultants, and the Board of Directors. These are the people who help NTPC to operate. The Panel heard criticism that NTPC has too many employees and their wages are too high. The biggest complaint may be that executives award themselves unjustified bonuses. Our objective in this section is to test these claims and, more broadly, to explain the Corporation's employee and management structure.

Operational employees: The Corporation has about 188 jobs; not all positions are currently filled (16 are vacant), and 19 of the 188 are part-time. With the exception of management, all NTPC employees are members

of the Union of Northern Workers. Their pay and benefits are subject to periodic negotiations and agreement with the Union. The total cost of union membership have not been calculated, but union contract provisions can result in plant superintendents earning up to \$15,750 a year in overtime, and stand-by allowances cost in total, about \$260,000 annually.

In its Hay River offices, NTPC has 30 people doing head office functions and another 41 doing operations support. Its operations support staff total 41 (i.e., warehouse, maintenance, engineering etc.). Field staff operations support includes 13 based in Fort Smith, 19 in Fort Simpson, 53 in Yellowknife and 32 in Inuvik. Included in the numbers of Corporation employees are 11 apprentices (in part because hiring people from outside of the NWT is getting more difficult), as well as 5 manager-trainees who will be expected to replace some long-term employees who are due for retirement.

We have heard some criticism of the inflated number of NTPC staff working in the field. The Panel also heard the exact opposite criticism - that NTPC does not have enough field staff and therefore has to rely on crews from other locations in order to respond to outages and rely on consultants for some repairs to technical equipment. Field operations deployment must be driven by safety regulations and the Corporation’s commitment to reliability.

In order to analyze the NTPC staff complement for operations, we sought to compare the allocation of NTPC staff against that of BC Hydro and NUL. BC Hydro is a government-owned utility that carries some operational requirements similar to NTPC. BC Hydro operates six diesel/natural gas sites, three backup diesel plants, one hydro plant, and three communities operated by independent power producers; NTPC has 21 diesel/gas plants, seven back-up plants, and six hydro sites.

Figure 14

Utility Operational Employees Compared		
Job Class	NTPC	BC Hydro
Plant Operators	17	16
Contractors	4	N/A
Mechanics	5	6
Electricians	3	5
Linesmen	8	5
Engineers	5	1
Elec. Technologists	7	1
Technicians	1	N/A
Managers	3	3
Clerks	3	3
Totals	56	40

Source: NTPC and BC Hydro

There are important factors that contribute to the Corporation’s staffing levels as well as the location of the staff. We described in a previous section of this Report how the Corporation has installed automated control and monitoring equipment in an operations centre in Yellowknife. It is staffed 24/7. This innovation allows the Corporation to constantly monitor all of its plants remotely. As a result, the Corporation has been able to reduce the number of staff in some locations and relocate them to communities where they can be better utilized, including responding to emergencies more quickly.

NUL is mostly a distribution utility that does very little generation. Figures obtained by the Panel showed NUL -NWT with 17 PYs and NUL -YK with 22 PYs for a total of 39. By way of comparison, NTPC has about 190 positions. It is noteworthy to show these comparisons, but it would be difficult to attempt to draw any meaningful observation(s) about NTPC from these comparative data.

More meaning might be taken from a comparison of NTPC and NUL wages for similar positions.

Figure 15

Maximum Hourly Rates by Job Class NTPC v. NUL		
Job Class	NTPC (\$/hr)	NUL (YK) (\$/hr)
Customer Service Clerk	33.34	28.85
Plant Operator	36.11	38.13
Electrician	39.00	39.76
Power Lineperson	39.00	43.13
Electrical Technologist	42.13	44.18

Source: NTPC and NUL

There are no appreciable differences between the hourly rates potentially earned by employees of NTPC or NUL (YK).

There is considerable demand in Canada for highly trained electrical journeymen and engineers. Utility companies across the country need skilled workers such as these to operate and maintain plants and related systems. Currently there is such a shortage in these key areas that the Corporation is trying to fill vacancies by recruiting people from overseas.

National labour market conditions, such as general shortages in linemen and engineers, place additional strain on recruitment. Competitive wage rates and benefit packages are needed to attract employees in areas where skill shortages are noticeable.

This Panel does not have the human resource expertise or mandate to undertake a detailed assessment of the current staff complement employed by NTPC against each job description. There is no reason to think that there is a skills deficiency among those currently employed by NTPC. Management makes hiring decisions based on available human capital and the level of financial resources available at the time of hiring; those decisions are subject to review by the Board of Directors and approval by the PUB as to service-level sufficiency and cost. Based upon the knowledge and experience of the Panel, we observe that the Corporation has a reasonable number of employees based on the job requirements and position responsibilities.

Equal pay for work of equal value: NTPC employees are subject to equal pay for work of equal value under the *Public Service Act*. All jobs at NTPC have been assessed accordingly to determine relative value. For a discussion on the implications of equal pay for equal work, see the section of this Report that deals with the extra costs of being a Crown corporation.

Overtime: Employees receive overtime pay of 1.5 times their hourly rate for the first 4 hours of overtime from Monday to Friday, and double time for weekends and statutory holidays. Employees that find themselves out-of-town over a weekend on business are paid 1.5 times their hourly rate even if they do not work; because of this rule, the Corporation requires them to work. This policy actually results in double time, but NTPC considers this policy to achieve the best value for money.

Reasons for overtime include:

- the need to provide services 24 hours per day, seven days a week
- constant staffing of the Yellowknife central control room requiring overtime on statutory holidays
- staff sickness or absence requires others to substitute for them
- the critical need to deal with breakdowns and emergencies quickly, adding to overtime costs
- staff out-of-town on weekends
- staff at remote sites
- journeymen travelling on maintenance

Most companies and governments have overtime policies. Overtime provisions are negotiated with the union. The causes of overtime listed above appear to be reasonable explanations. That said, sometimes the NTPC overtime policy can work against the Corporation. For example, staff working overtime is entitled to bank up to 10 extra days leave; when they eventually take this extra time off it can cause staff shortages, which in turn causes NTPC to incur more overtime costs as a result of the overtime payments to people who substituted for them.

In calendar year 2008, base payroll for unionized staff was \$7,929 million and overtime paid was \$1,766 million, or 22 percent of the base. We found that some NTPC employees make substantial amounts from overtime claims. The Corporation carefully tracks individual and total overtime payments, and where cost-effective will hire an additional person to ease the overtime burden. That said, as noted above, qualified staff are in short supply.

Senior management remuneration: There are nine persons employed by NTPC at the senior management level. Senior management is not unionized. Management pay is not based on GNWT management salary scales. Their pay is set in relation to union pay bands using similar methodology as the GNWT. For senior management the reasonableness is confirmed by the Hay Group methodology, which compares wages with 32 privately-owned utility companies and 19 government-owned utility companies. The Corporation has a senior management pay policy; however, it is more general than specific regarding how the results of Hay Group reporting are to be applied within NTPC.

Senior management remuneration is calculated in reference to the policy, with special provisions for the President/CEO. The President is the senior ranking Corporate officer and he reports to the Board of Directors. The President is appointed by the responsible Minister, and it is the Minister who is responsible for setting the President's remuneration rate on the recommendation of the Board of Directors (Section 11, *Northwest Territories Power Corporation Act*). The Board of Directors' Governance and Remuneration Committee reviews and recommends the President's remuneration.

The Corporation's 2009 annual report notes that pay rates for positions and employees are established by applying the principles of fairness, consistency, equal pay for work of equal value, merit, reasonableness, competitiveness within the utility industry, and overall market conditions. The annual report contains a chart showing senior management positions and the range of pay for each. For all nine positions added together, the total minimum pay is \$1,290,000, the maximum is \$1,559,000 and the total amount paid in 2009 was \$1,372,322. In addition, the nine officer positions can all benefit from what the Corporation calls, At Risk pay - more commonly known as bonuses. The payment of bonuses has been a hotly debated public issue.

Bonuses: Since the 1980s, NTPC has maintained its own remuneration plans under the decision making authority of its Board of Directors. One aspect of management remuneration that has been subject to criticism and extensive public debate over the past few years is the management bonus plan. NTPC has offered some remuneration through bonuses since 1996/97.

The Corporation calls this At Risk pay. This pay is not guaranteed; payment is based on the achievement of a mix of corporate and individual objectives, which include, among other areas: corporate profits, safety records, and environmental protection.

Senior managers receiving a bonus have annual appraisals, usually assessed by their superiors (and in the case of the President, by the Governance and Compensation Committee of the Board of Directors). The Governance and Compensation Committee is chaired by the Board’s vice-chairman and the Board’s Chairman is a committee member. At the beginning of a year, objectives are set for each person along with performance target components such as productivity, reliability, customer service, and safety and environmental targets. These objectives and targets are assessed at the end of the year to establish the degree to which they have been met, and this assessment helps to set the bonuses.

Under the plan, At Risk payments are made to:

- middle management, to whom payments are apparently paid in lieu of overtime that would otherwise be received if the employee worked for the GNWT, and the same retention and recruitment goals as for senior managers. The Corporation also notes that payments are designed to focus employees on corporate objectives and foster team work.
- senior managers, to whom payments are made as compensation for long hours and to retain senior staff who would be in demand elsewhere

From the year ended 31 March 2002, NTPC bonuses paid amounted to:

Figure 16

Management Bonuses (2002 – 2009)		
Year	Senior Management (\$)	Middle Management (\$)
2002	200,850	403,650
2003	387,600	607,685
2004	306,800	560,000
2005	298,000	547,300
2006	361,100	280,947
2007	232,230	298,900
2008	314,414	305,800
2009	96,400	180,400

Source: NTPC

The At Risk system has not gone without review by the PUB. The PUB examined the bonus system during the 2006-2008 GRA, and did not like the emphasis on net income achievement included in the calculation formula. The PUB allowed only half of the total bonus amounts (\$279,000) to be recovered from rates. The total cost of bonus payments is relatively insignificant when expressed as a rate cost (less than 1/10th of 1 cent per KWh).

The Hay Group was recently contracted by the Corporation to advise on the redesign of its bonus system. As with its remuneration expertise, the Hay Group has extensive experience designing such plans, including for the public sector. The newly designed system has, in its first year of implementation, resulted in significantly lower bonus payments.

Initially, the President/CEO could be awarded up to 40 percent of his salary and directors up to 20 percent of their salary in bonuses. Both of these percentages have decreased under the latest NTPC At Risk plan. Senior managers can now be awarded up to 15 percent of their salary as bonuses, although the President can be awarded up to 25 percent of his salary.

The GNWT also has a bonus scheme for senior managers, but it is not clear from the Corporation's limited disclosure whether it pays the same as the GNWT and if not, why not. The Corporation argues that middle managers would be entitled to overtime if they were employed by the GNWT. GNWT managers are entitled to over time; GNWT directors are not entitled to overtime. While NTPC employees have different job titles to GNWT departmental employees, many of the management jobs appear comparable (e.g., financial, human resources, engineering). And all of these employees are employed, if only indirectly, by the Government. While NTPC is arms-length from government, it is still owned by the GNWT.

It must be noted that many organizations today do pay bonuses. Sometimes these systems appear under different names, such as performance pay. To remain competitive in staff recruitment and retention, organizations often pay incentives to attract qualified people and to keep them. Some bonus plans outside of the NWT have also been controversial, including recently announced payments in Alberta where the provincial government, facing significant deficits, has been criticised for paying large bonuses to staff in departments, Crown corporations, and health boards. There has to be some recognition of the industry in which NTPC competes for senior and middle managers.

NTPC has to be competitive in an industry where bonuses are the norm. Having to replace a senior manager can be expensive: the costs include executive search firms (although NTPC uses them rarely), advertising, and travel. Paying bonuses may help to avoid greater costs in the long run to prevent individuals from being tempted to leave for better deals elsewhere.

The Corporation believes that the bonus plan is valid for business reasons. And this may be true, but the reasons for the At Risk plan, have, to date, not been well enough explained for wide public understanding.

The Panel believes that NTPC could have been more forthcoming about the existence of the bonus plan and explained to the public why it was necessary. Instead, the Corporation has done a poor job answering the public's questions about the bonuses. They cite privacy legislation as a barrier. This has created the impression that the Corporation is trying to hide something. It creates the impression that the bonus system is not valid.

Whether salaries and bonuses should be set in accordance with utility industry standards rather than with the standard of government is an interesting question. Some managers made the transition to NTPC from government, while others came from utility backgrounds. Given the steady increase in electricity rates, and even though the financial impact of bonuses on rates is miniscule, the public can be excused for questioning poor NTPC accountability on this issue. The recent Electricity Review Panel hearings noted much cynicism about bonuses.

Using Privacy legislation as a reason for not providing information may be justified in cases of highly personal information, but the bigger questions of public accountability are not well served if the Corporation is not forthcoming with information. If the hypothesis of staff retention is correct and defensible as justification for the bonus system, will the decrease in the annual total payment from \$600,000 to \$280,000 result in higher staff turnover at NTPC?

Consultants: The Panel has also recognized public criticism of the number of consultants used by NTPC. The Corporation's internal auditor did an audit of consulting costs up to 31 March 2008. For a four year period, NTPC spent \$40 million on consultants, divided between approximately \$22 million for capital projects and almost \$18 million for operations. The consultants' expertise covered a wide area and all were specialists; those retained included contractors from northern and southern firms.

In a small utility such as NTPC it is not cost effective to provide all services using internal staff. This is particularly true where recruitment challenges for some technical areas are already difficult. The consultants were hired

for unique expertise or to do tasks that NTPC were either not trained to do, not available to do, or where it was more cost effective to contract-out the job (e.g. camp services, including food, housekeeping and first aid).

Board of Directors: The Board of Directors are not full-time employees; they meet several times a year to undertake general oversight, strategic reviews, and decision making. The Board Chairman reports to the Minister. The Board of Directors comprise a Chairman, a maximum of 10 directors, a utility advisor and a legal advisor. Section 8 of the *Northwest Territories Power Corporation Act* allows for not less than six and not more than 10 directors.

Chairman	Lew Voytilla
Deputy chair	Peter Allen (Yellowknife)
Directors:	Eric Menicoche (Fort Simpson)
	Eddie LaVoie (Inuvik)
	James Schaefer (Fort Smith)
	James Wah-Shee (Behchoko)
	David Tucker (Yellowknife)
Legal Advisor	Peter Taschuk
Utility Advisor	Ronald Threlkeld

The Corporation’s annual report notes the responsibilities of and remuneration paid to the Board of Directors (not to be confused with internal positions that also use the term “Director” for the heads of functional positions). Directors receive an annual retainer of \$6,000 each and are also paid \$500 for days of meetings or \$200 for teleconferences. The Deputy Chair and Board Committee Chairs each receive an additional \$5,000 per year. Directors spend about 20 days per year each on NTPC business.

The Board Chairman receives \$1,500 per work day, amounting to between 60 and 120 days annually (\$90,000 to \$180,000).

Office of the Chair: The Corporation’s chairman provides his services under contract. His office is based in Yellowknife, not in Hay River. The Office of the Chair includes a Corporate Secretary, Director of Communications (new), some administrative support, and two employees who work directly for Hydro Corporation subsidiaries. The Corporate Secretary position is shared, and the costs divided equally, between the Chairman’s office and NTEC (O3).

Figure 17

Total Costs for Office of the Chair 2003/04 - 2008/09	
Year	Total Cost (\$)
2003/04	343,000
2004/05	515,000
2005/06	372,000
2006/07	478,000
2007/08	641,000
2008/09	663,000

Source: NTPC

Conclusions: Many NWT companies employ engineers, trades people, as well as finance and administrative staff. One of the pressures on NTPC has been that it has had to compete against the high wages and attractive career options of the adjacent Alberta oil industry. The creep in salary and bonus pay, to both recruit and retain a competent and professional staff results, in part, from this pressure. Moreover, there are recruitment and

retention barriers for all organizations operating in the North. These pressures do not necessarily justify all rates of remuneration, particularly for a public sector utility.

A comparison of NTPC and NUL non-management pay scales found no significant differences; we have not compared other terms and conditions of employment, including overtime. For NTPC middle management and senior management, the bonus program has recently been reviewed and reduced. Still, the majority of senior NTPC staff is paid at the higher end of the pay scale. The combination of wages and bonuses paid to NTPC management is on the high side.

Head Office and Operations Support

Costs: The Corporation’s head office is in Hay River. It has been located in this community since NCPC was purchased and the Corporation established in 1988. Corporate activities carried out from the head office cover many of the functions one would expect for a corporation of this size. Approximate annual costs for these functions are shown in the table below.

Figure 18

Projected NTPC Head Office Costs by Function 2009/10	
Function	Cost (\$000)
Executive (includes all executive salaries)	1,917
Human Resources,	823
Corporate operations, includes:	1,620
public relations,	
safety and environment,	
training coordination,	
business development,	
transmission and distribution	
Information systems	2,348
Engineering,	1,319
Finance and accounting,	2,468
Chairman’s office	484
Total	10,979
Source: NTPC	

Included in this total is approximately \$7 million for salaries and benefits for permanent head office and operations support employees. Six senior management employees and related staff operate out of Hay River (president, finance, human resources, operations, engineering and information systems). Some parts of some functions are direct costs of operations or capital projects, costed accordingly and charged to those other activities. In total, the Corporation has 30 people engaged in head office functions, 16 percent of the total corporate staff complement.

There has been criticism of NTPC having an inflated head office complement. This Panel has not examined each of these functions in fine detail, but our professional observation is that the functions carried out at NTPC’s head office are a necessary result of having a stand-alone corporation to manage the business of power generation and distribution.

A subsequent section of this Report addresses the costs of being a Crown corporation. Some of these costs are directly reflected in the activities of the head office in Hay River. Some of these costs, admittedly, would not be borne by a private business; but a private business would also not provide the same benefits to the NWT. As far as we can tell, head office costs are not a result of being poorly managed or a result of being situated in Hay River, but are the costs of doing business as a Crown corporation.

Benefits: The head office location has been challenged by some as being a contributor to higher costs. The Hay River location does add to travel costs when staff is needed elsewhere (for emergency repairs or meetings in Yellowknife). Whether another location would be more or less expensive cannot be known. We do know that the town of Hay River obviously benefits from employment, secondary spending on goods and services, as well as some local expenditures by the Corporation itself. If the head office were to be located elsewhere, Hay River would lose these benefits and some other community would gain. We have not seen any study that quantifies economic benefits to Hay River resulting from NTPC. It may be most useful to remind readers that a savings of \$10 million (a little less than the cost of a corporate head office), would only reduce rates by about 3 cents.

Conclusions: The Panel believes that NTPC’s Hay River head office costs are appropriate to the Corporation. A stand-alone entity such as NTPC needs a corporate head office for management functions that included modern systems for administration, finance, payroll, billing, human resources, health and safety, purchasing, information technology and engineering. The head office costs of NTPC are reviewed in detail by the PUB during GRAs.

Recommendations concerning Corporate Efficiency

3. **NTPC should improve its capital project scope identification and cost estimating processes in order to reduce scope creep and cost over runs after initial approval by the Board of Directors.**
4. **Given the large number of trips taken by NTPC staff, NTPC should strengthen its internal controls over travel by ensuring that all trips are pre-approved and that all travel claims (including those of management) are reviewed by supervisors.**
5. **The NTPC pay policy should be made more specific as to how the results of Hay Group reporting are to be applied within NTPC, and in particular greater specificity is needed for the target range that the Corporation uses in establishing senior management salaries.**
6. **NTPC should expand the disclosure of its annual report to include enhanced details of all staff salaries, including bonuses and benefits.**
7. **At the next change of senior management, NTPC should consider reducing senior management by at least one position by combining the President and Chief Executive Officer’s responsibilities into a Yellowknife-based Executive Chair/CEO and a Hay River-based Chief Operating Officer. The COO would be the local senior officer, with commensurate delegation of some functions to subordinates.**

Mandate

Interpretation of the Mandate

A basic step in studying the costs and efficiencies of an organization such as NTPC is to examine what is expected of the company. Expectations – or, the mandate – were first explained in Part A of this Report. In this section, we go beyond simply stating the mandate, to critically examining it. Given all that the Panel has heard about NTPC, and not only the range of opinions but also the difference in opinion about the Corporation, we thought it essential to address the apparent tension in the Corporation’s mandate. Our purpose is less to conclude how well NTPC does in interpreting its mandate, and more to illustrate the challenge that NTPC faces in interpreting its mandate.

Differing public perspectives: There exists an underlying tension between the business objectives of the Corporation and the social objectives of the Corporation. Business and social objectives will not necessarily be in conflict, but sometimes can be. The business-social tension underlying the purpose of NTPC was evident to the Panel throughout our work, particularly during the course of our interviews and research.

Some people clearly expressed to us that the Corporation was not sufficiently business-like in its operations. We understood such claims to mean that the Corporation was not entrepreneurial enough, was over-managed, and did not appropriately seek cost efficiencies in all of its undertakings. We also heard the inverse to be true. Some people told us that the Corporation was not sufficiently socially aware. We understood this to mean that the Corporation prioritized cost efficiencies above all other priorities, was too profitable, and did not pay enough attention to the needs and concerns of territorial residents.

It was hoped that by looking at the written mandate of NTPC we could resolve exactly what the Corporation was intended to do. However, a review of the mandate actually does more to reveal a business-social tension, than to resolve it. To get a better sense of this tension, it is worth reviewing the core mandate.

The objectives of the Corporation are set out in section 5 of the *Northwest Territories Power Corporation Act*:

Section 5:

- (1) (a) to generate, transform, transmit, distribute, deliver, sell and supply energy on a safe, economic efficient and reliable basis;
- (b) to supply water and sewerage services;
- (b.1) to undertake programs to conserve energy;
- (c) to ensure a continuous supply of energy for the needs and future development of the Territories; and
- (d) to undertake any other activity authorized by the Executive Council.
- (2) The Corporation may, with the approval of the Executive Council, establish one or more subsidiaries to carry out its objects.

From time to time the Executive Council, through the Minister, has clarified or added to this mandate (in accordance with the prerogative of the Executive Council and section 5(d) of this *Act*). Perhaps the most significant directive issued by cabinet, in relation to the Corporation’s mandate, came in 2002:

- a) maintain the provision of safe, secure, and reliable power to the communities of the Northwest Territories currently served
- b) aggressively pursue alternative generation technologies that reduce greenhouse gas emissions (i.e. hydro, wind, solar, biomass, etc.)
- c) aggressively pursue new domestic and export markets with a view to expanding the electrical sales base in order to reduce per kilowatt generation, transmission and distribution costs to clients served within the Northwest Territories

- d) aggressively pursue partnership and joint ventures with northern parties to increase the economic benefit of electrical generation, transmission and distribution to the economy of the Northwest Territories
- e) maximize the value of the Northwest Territories Power Corporation to its shareholder through profitable expansion and diversification.

The Corporation's objects have also been amended by Cabinet to include:

- Financing the Snare Cascades hydro facility;
- Generate, transform, distribute, deliver, sell and supply energy and related services outside the Territories including elsewhere in Canada and in other countries;
- Supply, design, operate, maintain, construct, train, acquire fuel and provide other services in the Territories and elsewhere in Canada and in other countries in relation to diesel power plants; and
- to produce, gather, process, transport, distribute, purchase and market gas and natural gas liquids and to construct, operate, maintain and acquire and hold an interest in pipelines, processing plants and related facilities.

The Corporation interprets this mandate through its mission and vision statements; these statements guide the Corporation's strategic and operational planning. The Strategic Plan expands on the Corporation's mandate by developing more focused avenues for management attention, and the plans' objectives are developed into time targeted objectives for staff. (Appendix 1 details the Corporation's mission and vision.)

The business-social tension is, in part, an identity conflict inherent to Crown corporations. Crown corporations are established arms-length from government and intended to operate as businesses, but are ultimately created to provide a social good: in this case, safe, reliable, and affordable power.

The business-social tension facing NTPC was recognized in 1988 when NTPC was established under territorial jurisdiction. During legislative debates in 1988, when the purpose of NTPC was being discussed, there was a lot of talk about the Corporation coming home, better serving the people, and meeting its social obligations. However, at the time of establishment, the Minister reported to the Assembly that there had been no fundamental change to the Corporation (NCPC), and that it was being received on an 'as is' basis.

What was received through an administrative transfer from the federal government to the territorial government was a Corporation that had originally been established to assist with the successful operation of the mines. What we now have is a regulated Crown corporation that holds a near-monopoly over power generation and supply in the NWT.

Impact on business relationships: NTPC takes a business-first approach to its operations. Senior management conveyed this purpose to the Panel. Public criticism echoes this view. Many people perceive that the Corporation believes in business-first and that it appears that NTPC does not care enough about people. Perhaps people single out and criticize NTPC's business-first approach because the public owns the Corporation and thus feel that they are entitled to expect more.

A business minded approach can be beneficial to social ends. The Corporation has engaged in successful business-like initiatives over the years, such as developments at Snare (in partnership with the Tlicho), the proposed Taltson expansion with partners, residual heat projects, and the proposed acquisition of the Hay River franchise a few years ago.

That said, a business minded approach can sometimes send a messages of coldness. At the recent Infrastructure Conference in Yellowknife (October 2009), most northern firms had their Presidents and or CEOs in attendance. Those businesses considered this venue an ideal opportunity to rub shoulders with customers and potential customers, rebuild alliances and relationships, and generally network with business and other communities. The Chairman of this Panel attended the Conference and had conversations with many colleagues and acquaintances from his years of northern experience. He was approached by attendees who knew of his role in this Review.

Their assessment of NTPC was less than flattering. The Chairman of the NT Hydro Corporation attended (and made a presentation about Taltson) and was accompanied by a staff member from the unregulated side of the GNWT power companies. No one attended from NTPC. This absence was noticed and criticised. It seems that a golden opportunity was missed by NTPC to develop new alliances and share knowledge and experience with Conference attendees.

Impact on customers: A similar concern relates to the way the Corporation is seen by customers. We heard complaints about NTPC's perceived insensitivity towards its residential and commercial customers. A common story concerns people who can't afford to pay their bills and get cut off. Once power is cut-off there is an increased barrier to re-establishing a connection resulting from disconnection charges, account arrears, and reconnection fees. Examples of power cut offs usually involved an older person who may not have understood all of the ramifications of non-payment. These are socially difficult issues to deal with.

The Corporation has a policy and well-developed process set up to deal with customer concerns and has trained its staff accordingly. Management meets with customer service staff to identify and correct problems where they can, and a system is in place to track complaints and how complaints are resolved.

If an individual is cut off for non-payment, it is the last step in a process where many things have happened, including efforts to help the customer find the resources to pay their bill. But at the end of the day, if the Corporation is to continue providing power to non-paying customers, it could soon run into financial difficulties and all residents would suffer. While nobody wants to see any customer cut off without power, there are safeguards in place to make sure this doesn't happen, especially during the coldest months (this include the roles of GNWT social agencies).

NTPC is not a social program and customers have to find a way to pay their bills. That said, the Corporation also has to find a way of being more sensitive to those in need.

Incentives: Part of the problem lies in that the mandate and structure of the Corporation provides little or no incentive to pursue social objectives. This is one way in which a Crown corporation may be quite different from a private business. In business there is a real incentive to build relationships with customers, other companies, and even competitors. Poor relationships can negatively impact upon revenue. NTPC is a business that does not necessarily face this concern. As a regulated near-monopoly, NTPC's bottom line may show few short-term negative effects from poor business and customer relations. The long-term effect, however, can be that the majority shareholder in the Corporation - the people - begin to question the benefits of ownership.

Conclusions: Presently, the mandate of NTPC largely combines the objectives found in the *Northwest Territories Power Corporation Act*, which were set in 1988, and the 2002 Cabinet directive. In 1988, the Corporation was established as a regulated entity expected to operate along normal business lines. Subsequent direction from the Government has imposed more development-related challenges. The overall NTPC mandate does not clearly signal what the Government expects from the Corporation.

Conservation

The promotion of conservation - better building insulation, energy efficient lights and appliances, and just simply changing behaviours such as turning off lights - is an activity that all utilities in Canada have undertaken over the past decade or more. Conservation measures reduce electrical energy consumption and thus result in lower monthly bills.

Energy conservation is a matter of concern across Canada, and particularly in the North. Energy prices, climate change, and the cost of living all drive this concern. NTPC is mandated to address issues of conservation. A possible paradox results from this mandate: a business that has an overall purpose of selling power is tasked with encouraging its customers to reduce power usage. Some customers have recognized this catch-22 situation and are frustrated because, from their perspective, conservation will only lead to higher power bills. Are parts

of NTPC's mandate actually working at cross-purposes? We have approached this question by first explaining the NTPC mandate regarding conservation, examining the implementation of this mandate, and studying the balance between consumption and cost. Our purpose is to conclude, as far as the evidence will allow, the place of the conservation mandate within NTPC's broader objectives.

Conservation mandate: NTPC has a specific mandate "to undertake programs to conserve energy" under the *Northwest Territories Power Corporation Act* (section 5(1)(b.1)). The Corporation has interpreted this mandate as a duty to promote energy conservation among customers by encouraging the use of energy efficient appliances, improved building insulation, and overall energy efficient practices (such as closing doors and windows, or installing timers on power outlets). NTPC has also applied its conservation policy to its internal operations.

The NTPC Vision states: "Our customers will have the tools and knowledge they need to understand energy consumption, drivers of consumption, and how to conserve energy." The value of conservation is further reflected throughout the mission statement and programs of NTPC. While the Corporation appears to have embraced this task well, the conservation mandate appears to be at cross purposes with its larger business objective. The responsibility to promote conservation is close to a social mandate.

Conservation challenges: Changes in consumption methods and patterns further complicate approaches to conservation. Modern households tend to have more electricity-consuming appliances than those of a few years ago. Although many new appliances are designed to be more efficient than yesterday's models, the increased volume of household appliances (big TVs, computers, kitchen devices) increase total power demands. For example, from the period 1999-2007, the percentage of NWT households owning personal computers rose from 56 percent to 76 percent, and the percentage of NWT households owning 3 or more televisions rose from 20 percent to 33 percent. Despite conservation efforts, average household consumption of electricity in the NWT increases every year.

Households are not the only users of power in the NWT. In fact, the largest consumer of NTPC generated power is the GNWT. The Corporation's 2009 annual report noted that the GNWT purchased \$22.8 million of power directly from NTPC in 2008/09 (plus a further unknown amount from NUL's operations in Hay River and Yellowknife), some 27 percent of total sales; in the previous year, the GNWT purchased 30 percent of the power sold. (Figures include rate riders.) The GNWT uses power for its offices, schools and hospitals, as well as for the social housing program operated by the NWT Housing Corporation.

Co-operation from customers: Conservation initiatives require the cooperation of consumers. Not all NWT customers are motivated by the same energy price signals. For the purpose of inquiry, residential energy consumers in the NWT are classified into three categories: *Housing Support* - those who live in public housing and pay a fixed reduced rate for power (6 cents per kWh); *TPSP* - those who access the Territorial Power Support Program; and, *No Support* - those situations where a residential home does not qualify for the Territorial Power Support Program (e.g., where the employer pays the power bill).

We conducted this inquiry because we consistently heard that subsidies acted as a disincentive to conservation. The belief appears to be that, as power bill subsidies increase then conservation will decrease. Our findings did not support this belief.

We asked the Corporation to run a special report for us showing average household consumption over 2008/09 in six communities (four diesel, two hydro). It was our objective to see if there were significant differences in consumption based upon the level of subsidy received. If significant differences were apparent, this may hold implications for how NTPC pursues its conservation mandate, and potentially the business relationship between NTPC and the GNWT (particularly with the Northwest Territorial Housing Corporation).

Figure 18

Consumption and Subsidies, Selected Communities 2008-09					
Number of units by category					
	Total Units	Housing Support	TPSP	No Support	
Diesel Generation					
Fort Simpson	525	60	383	82	
Norman Wells	377	31	217	129	
Sachs Harbour	62	19	18	25	
Fort Good Hope	213	33	151	29	
Hydro Generation					
Fort Smith	1040	108	-	912	
Dettah	97	36	48	13	
Average Monthly Consumption (kWh)					
Fort Simpson	-	339	501	435	
Norman Wells	-	418	466	748	
Sachs Harbour	-	424	586	275	
Fort Good Hope	-	380	569	376	
Fort Smith	-	592	-	848	
Dettah	-	508	668	388	
Subsidies Paid by Owners (avg / month)					
	Housing Support		TPSP		No Support
	Customer		Customer		Customer
	Bill (\$)	Subsidies (\$)	Bill (\$)	Subsidies (\$)	Bill (\$)
Fort Simpson	20.36	194.29	136.99	162.90	270.01
Norman Wells	25.05	168.32	127.42	82.15	331.48
Sachs Harbour	25.43	565.7	160.14	656.59	408.88
Fort Good Hope	22.82	227.29	270.59	270.59	297.2
Fort Smith	35.50	77.40	-	-	153.63
Dettah	30.49	126.91	182.57	17.53	124.74

Source: NTPC

There is a belief that public housing tenants consume significantly more power than residents who live in private housing. The evidence shows no pattern to support this belief. In fact, in several of the communities examined here (Fort Simpson, Norman Wells, Fort Good Hope, Fort Smith), those households with the highest subsidies had the lowest levels of consumption.

Conservation efforts: NTPC offers energy efficiency audits for unsubsidized power customers in NWT residential properties. The program started some seven years ago in the Delta / Sahtu regions and was initially funded by

the federal government, and has since extended across the NWT using territorial funding. The penetration rate (i.e., percentage of eligible residences that received audits) was in the range of 40 to 50 percent. In the past five years, NTPC also has carried out a similar program on commercial buildings and 13 buildings have had audits completed. Each commercial audit costs about \$10,000 and was paid for by NTPC.

NTPC is not the only organization in the NWT promoting energy conservation. One institution with an overall energy efficiency mandate is the Arctic Energy Alliance (AEA). The AEA is a not-for-profit society that was established in 1997, whose members include GNWT departments, multi-national oil companies, and NTPC. Remarkably, the vision, mission, goals, objectives of AEA do not mention conservation – but energy audits are part of the core business of AEA. This organization spends much of its budget and time performing residential energy retrofits, assisting NWT communities with planning energy use, and generally promoting the efficient use of energy. The Panel has heard that the role of AEA and role of NTPC as a member of AEA is not well defined, nor necessarily mutually beneficial. The nature of this relationship may require further research not within the scope of this study.

Community consumption rates from 2000/01 – 2004/05 show increases in average household energy consumption across the territory. Despite efforts by NTPC and others, overall territorial power consumption does not show a trend towards conservation. This overall trend makes it very difficult to test the proposition that widespread conservation would lead to higher power bills. There simply has not been widespread conservation. At any rate, we doubt that conservation would lead to higher power bills. One must recall that NTPC is a regulated utility, and that the rates charged are subject to approval by the PUB. Rates are determined through the GRA process, where assessments of the utility company's proposed operational costs and cost of service help to determine rates. It is difficult to see how an approved rate increase could actually be *caused* by decreased residential demand.

Conclusions: The mandate of NTPC exhibits an apparent contradiction. It is tasked with earning its revenue requirement (as approved by the PUB) while at the same time expected to promote energy conservation. As a business enterprise, undertaking any exercise that reduces or potentially reduces revenues is counter intuitive. Faced with this seemingly paradoxical mandate for the past twenty years, the Corporation has done a good job in managing conservation programs such as energy audits, it has promoted the use of energy efficient appliances, and has advised customers on energy saving practices. As future research is carried out on energy conservation programs and approaches, it is worth noting that, according to results in this study, subsidies do not appear to cause residents to be less aware of the importance of energy conservation.

Alternative Energy

The topic of alternative energy constituted only a small portion of this Panel's Terms of Reference. However, during the course of our discussions with selected interviewees, we could not help but notice the number of times this topic was raised. The issue put to us was always the same: why is NTPC not doing more to research and develop alternative energy? This Panel has not studied, nor would it be qualified to study, alternative energy projects or technologies in detail. We did undertake to find and read any available comprehensive studies that analysed the feasibility of alternative energy options in the northern Canadian environment. We found little evidence that conclusively proved feasibility. More importantly, our responsibility was to consider the alternative energy debate in relationship to NTPC's mandate and the place of this issue within the structure of the energy companies set up by the GNWT.

Debate about alternatives: Just about everyone we spoke with had opinions about alternative energy and conveyed strong views about the Corporation's commitment (or lack thereof) to alternative energy development. NTPC currently generates its power from hydro, diesel and natural gas. It is challenged by politicians, customers, and the general public to adopt more alternative energy technologies. People want to see more power generated from alternative sources in order to reduce greenhouse gas emissions and reduce costs.

The alternative energy challenge is not an easy one to address. Although the Corporation generates nearly 80 percent of its electricity from hydro, its remote, non-linked plants in the smaller communities are exclusively diesel powered, except for two natural gas sources (Inuvik and Norman Wells). Communities served by diesel plants are, for the most part, remote. Based on our knowledge of electricity generation and related technical necessities, it is our view that a grid linking these communities would be cost prohibitive and uneconomic, particularly where costs must be recovered from rates.

It appears as though the pursuit of alternative energy technologies are attractive in part because of the promise of reductions in greenhouse gas emissions as well as the impression that government grants are widely available to pursue alternatives. Rarely does the debate account for issues of reliability and security. It is also not clear who should pay.

For some technologies, there are already experimental or demonstration projects underway that have been funded by governments (in some cases by NTPC), such as the micro-turbines at the Midnight Sun Recreation Centre in Inuvik. NTPC spent \$400,000 to install and another \$100,000 to repair and upgrade these turbines.

Is it the role of NTPC to develop these alternatives? Or should this role be assigned to an unregulated, government-funded research body who could develop a concept to a reasonably practical level and test for utility in this environment, to prove that a technology can be effective – operationally and economically - in the North?

Précis of the NTPC policy: The Corporation has a policy to study emerging new technologies and analyse their applicability to the North. It will not act as a pure researcher and will not invest in unproven technologies but will invest in testing how proven technologies work in the northern environment, provided that the PUB approves the undertaking and that external funding is available. NTPC will undertake alternatives that reduce its diesel costs or environmental impacts where additional funding makes up the difference of any extra costs (e.g., reliability, maintenance and repairs).

Improvements in power generation that reduce greenhouse gas emissions are of interest to the Corporation, but the Corporation also remains mindful of financial efficiency and that consumers and governments ultimately bear extra costs.

Types of alternatives

Alternative technologies cover a wide spectrum of possibilities. The following is a brief discussion of some of the new technologies being promoted. This discussion is not intended as a final pronouncement on alternative energy options; rather, it reflects what we learned from comprehensive studies of alternative energy feasibility in the North.

Biomass: This technology has shown some promise in Europe and is now in use in some other countries. Biomass plants can be engineered to burn a wide variety of consumables. Large-scale biomass plants require reliable and affordable feedstock. In the NWT, large scale biomass use would need further study on the sustainability of generating sources, infrastructure requirements, fit with the overall structure, and economics. Some small scale projects are underway, but we have seen no analyses of potential operating costs in remote NWT communities where the logistics of feedstock supply/cost and storage may be considerable. Small scale heaters may replace heating oil at the level of individual buildings, but total community electricity supply does not yet appear feasible.

Small hydro generators: There appears to be a high level of public interest in micro or other small hydro generators, sometimes referred to as run-of-the-river generators. These may have future potential in some cases but, to date, we have seen no definitive studies that indicate their reliability for year round use. Maintenance and other operational challenges remain outstanding subjects for exploration.

Solar power: Solar power is growing in usage for many micro applications, such as powering road signs. Roof top or nearby ground installations that contribute to conventional demand reductions for individual or groups of buildings surely help with reducing costs from conventional power sources. We have not seen studies that

indicate northern application for larger scale electricity production. In some parts of the North, solar power (even small scale projects) may be unachievable on a year-round basis due to conditions of winter darkness, snow cover and low sun angles. With solar power, having the power available when the consumer needs it is also a challenge. This requires either some storage medium or a back-up power source for when the solar power is not productive enough.

Wind: Wind power is a frequent topic of conversation when northerners discuss alternative energy potential. Some experimental projects are being carried out in the NWT, and we understand that studies continue. According to a recent pan-northern study, some projects in Nunavut have been abandoned because of inconsistent winds. Wind energy holds potential, but it seems premature to speculate on the potential for the large-scale use of wind power given inconsistencies or weaknesses in the force of the wind (in some places), and potential costs for maintenance and repairs.

Larger hydro: There is significant potential for large scale hydro development in the NWT, the most immediate being the Taltson expansion. Most future projects are a long way off, with extensive engineering, environmental and other impact studies (e.g., wildlife, fisheries and water use), not to mention negotiated partnerships, access arrangements with land owners (including for transmission lines and related installations) and overall financing. Large scale hydro in the NWT could replace some existing diesel generation and perhaps eventually be sold for export to stabilize or reduce territorial electricity costs.

Without suitable test results, studies and definitive research, a practical large scale replacement of diesel plants from sources other than large hydro may be many years away.

Belief that NTPC is not proactive in developing alternative energy: Much of the public's frustration at the slow pace of alternative energy adoption has been focused on the Corporation. There is a belief that the Corporation is delinquent or not enthusiastic enough about alternative energy development. This Panel strongly questions whether NTPC is the appropriate venue for the pursuit of such developments. The mandate of NTPC in statute makes no specific reference to alternative energies. However, a 2002 strategic directive from the GNWT Executive Council directed the Corporation to "aggressively pursue alternative generation technologies that reduce greenhouse gas emissions (i.e., hydro, wind, solar, biomass, etc.)." It is not clear from the directive how NTPC is to approach experimentation with or payment for alternative energy projects.

Many alternative energy ideas appear to be in the early stages of development and as yet are unproven for reliable operations in northern Canada. The Corporation has already invested heavily in proven technologies that work in the North: hydro, natural gas, and diesel. Although many people would like to replace diesel plants with more attractive technologies, no one seems to have yet completely analysed issues of reliability, capital investment costs (and who pays), and how to deal with the unamortized cost of existing plant investments that are already owned by the Corporation.

NTPC and its subsidiaries are regulated entities where all its costs are ultimately charged to rate payers, at the discretion of the PUB. Its legal mandate does not suggest a role for the Corporation in research and development, even though some believe that it should. Researching alternative energy potential is expensive and risky. We do not think that it is the role of a regulated energy provider to fund research and development.

If newer technologies are proven to work and be economic in the northern environment, the Corporation would then be much more likely to adopt and implement them. At present, the public seems to be blaming the Corporation for not doing something that is outside of the parameters of responsible business operations and outside of its mandate.

Conclusions: Energy research and development is a role for governments or other publicly funded institutions which develop alternatives to the point where they can be economically and environmentally viable. At that point, power suppliers, such as NTPC, can assess whether the technology makes sense, is reliable and safe, is environmentally sound and, from a rate payers perspective, would be more economic when compared to diesel.

Even if alternative energy ideas are not yet at a stage where they could replace diesel generators, this does not take away from the value of the alternative energy dialogue. NTPC could likely be more supportive of efforts by others and become more engaged in the alternative energy dialogue.

The Corporation's poor image in this regard appears to stem from a lack of empathy and a view that it defends its diesel operations without adequately considering alternatives. Even if alternatives are years away from fruition, a more supportive approach by NTPC may convince some of its critics that it cares about exploring alternative energy sources. It should also make clear the limits of the Corporation's mandate and ability to explore alternative energy.

When we asked the Corporation if it had considered a publication on alternative energy technologies that explores the pros and cons, they replied that no one would read it. This is a defeatist attitude. We urge NTPC management to take a more proactive approach and become more visibly engaged in the debate.

Communications

Communication is an important activity for all businesses and public entities. This subject was brought up in all the interviews that the Panel conducted and no interviewee spoke favourably about the Corporation's communication record. While few had harsh comments about the Corporation's technical communications, they all felt that something was missing. Good communications cover a range of activities from formal communications such as reports to the Minister responsible for NTPC, annual reports, information for customers, to senior staff contact with community leaders, plus informal exchanges with the public about the issues that concern them, and activities that make the corporation visible to its customers.

Types of communication: The Corporation produces high quality publications. The *Northwest Territories Power Corporation Act* requires the Corporation to submit annual operating and capital budgets, long-term generation and transmission plans, and responses to any questions asked by the Minister. The Corporation also must prepare an annual report and have its accounts audited annually by the Auditor General of Canada. These documents are available to the public, as are periodic reports submitted to the PUB. There is no lack of formal communications from the Corporation, but in spite of these efforts, people still feel disconnected.

At the root of the problem, as far as this Panel can determine, is that formal documents, although they contain a wealth of information, may be too technical or impersonal to connect with many people. Required documents do not answer customer questions. Customers are best engaged by personal connections with senior staff.

Realistically, technical and financial documents are often not accessible for most people, either because people do not know where to find this information or because they do not understand the information that is available. In the place of effective communication, myths take root and grow. What the Corporation needs to do is have key senior people provide more face time with the public. We were told that the Chairman and President are viewed as too remote and impersonal.

Customer surveys: NTPC hires a communications consultant to conduct an annual survey of both residential and commercial customers. The results of this survey feed the Corporation's understanding of itself. There are a couple of difficulties with this approach. One is with the survey methodology. The methodology is sufficient, but may result in a slightly skewed perception of residential customer satisfaction. The residential survey relies upon random phone calls made Monday to Friday, between 8:30AM – 5:30PM. There is a strong likelihood that successful calls will be placed with people who are normally home during these hours of the weekday and may exclude others who are not. This leads to a potential difficulty. If NTPC's self-perception is derived from the results of this survey, it may not realize the true extent of any dissatisfaction.

Staff inaccessibility: Senior staff is considered to be too remote from the public both physically and personally. The physical aspect is less a function of being in Hay River, and more a function of spending too much time *only* in Hay River. Although it is difficult for the Panel to get to the bottom of a matter that is based on innuendo and anecdotal comments, the consistency of such comments points to a problem: a problem that has not been adequately acknowledged or addressed.

Part of the communication problem may be structural (i.e., the business versus social tension); part of it also seems to be ideological (i.e., a belief that the Corporation doesn't have to communicate well). When issues such as alternative energy, bonuses, or rates cause the frustration of people to rise, a corporation that does not communicate well and is thus viewed as cold becomes an easy target.

In our view it would help if the senior staff could hold more round-table and possibly less formal meetings with customers and communities. We know that the Corporation feels that the staff makes every effort to connect with people. It cited examples where NTPC publicizes visits to communities well in advance, but has few people bother to turn up to meet them with questions. Based on the public comments made about specific individuals, it seems that the public has formed opinions about the NTPC leadership. Once the public forms a negative impression about an entity or its people, it is hard to change.

NTPC appears to have become more remote from the public. People need better connections with the Corporation.

Customer communications: NTPC sends customers information leaflets along with their bills (also called bill-stuffers). It publishes information brochures designed to help customers understand their accounts, and the electricity system as a whole. The Corporation also has a web site, www.NTPC.com, which contains useful information on subjects such as outages. These efforts to connect with customers are necessary, but not sufficient.

Part of the problem lies in the lack of face-to-face communications with customers, communities and MLAs. This seems to be partly due to a lack of real contact between people and NTPC senior officials.

Elsewhere in this report we have noted some common myths about NTPC. With better communication from NTPC, these myths would have been unlikely to grow and spread. The fact that the Corporation has done little to counteract them is disappointing. The recent hiring of a new Director of Communications should help in this regard.

The Panel believes that the President and other senior staff should travel more and meet face-to-face with customers and community leaders to listen to their concerns. At the present time the Corporation appears to believe that such meetings have little value.

The Board of Directors currently holds one of its meetings each year in a community other than Yellowknife. It hosts a reception for the council and some business people, but does not necessarily connect with ordinary customers.

A few years ago, the then Chairman organized Board of Directors' tours where the entire Board and senior staff would visit all communities regularly to meet with people. This seemed to work well and the Panel believes it should be re-introduced. At each stop, rather than just meeting local elected members and business persons, the Corporation could host a culturally appropriate gathering such as a feast or barbeque, open to everyone in the community. The costs would be modest, but the benefits could be significant.

Communications with NUL: The business relationship between NTPC and NUL is both interesting and complicated. On the one hand, NUL is by far the largest non-government customer of NTPC. The Panel noted that, from NUL's perspective, no close client/customer relationship exists between the two companies, although NTPC believes that it does. Why is this? Well, quite simply, it is because NUL is also a competitor with NTPC.

NTPC and NUL are the companies that make up the NWT electrical system. While they are not in direct competition with each other (e.g., two gas stations across the street from one another), there is future oriented competition. Any future opportunities that come up in the NWT would likely attract interest from both utilities, thus these two companies compete for the hearts and minds of the public.

They are also mutually dependent on each other, not so much for the individual thermal communities that each one serves, but in the hydro region. NUL retails what NTPC produces. As it stands, one cannot succeed without the other. Yet, they coexist in a somewhat uneasy partnership. NUL is the biggest non-government customer of NTPC's in terms of sales by volume. NTPC relies on NUL to get its product to market in the hydro region.

At the field level, the staff of each utility company works well together, even to the point (we have heard), of helping each other out during an emergency. Yet at the senior level, the relationship seems more frosty. Meetings between senior managers are infrequent.

As long as there is competition for franchises in the NWT there may exist a rivalry between these two companies. These two companies are like two Canadian professional football teams that cooperate together to create a great football league, but compete on the field until the dying seconds of every game.

Political disconnect: Although the Corporation is expected to operate like a business, it cannot do anything that it wants. The main control imposed on NTPC by the legislation is to make the Corporation a regulated utility, subject to the *Northwest Territories Public Utilities Act*. This enables the PUB to oversee and approve most aspects of the Corporation's business. The PUB is a constant monitor over the Corporation's activities, and has an effective veto over several areas of corporate decision making. Statutory, regulatory, and policy boundaries are real constraints upon the Corporation.

The Legislative Assembly itself does not impose any direct control over the Corporation; the *Act* requires the Corporation's Board of Directors to report to the Assembly through the Minister. The Board of Directors is responsible for the governance of the Corporation, subject to applicable legislation and cabinet directives.

The Chairman of the Board reports to the Minister, not to the Legislative Assembly. To reinforce its independence from government, and to emphasize the oversight role of the Board of Directors, the Corporation had developed a relationship protocol for the Minister. At times in the past, this has led to misunderstandings about the nature of the relationship between the Minister and the Board.

The Panel believes that it would help if the President and Chairman could see beyond the restrictions and technical definitions implicit in the legislation and meet, or at least offer to meet, with MLAs in an open discussion (with the Minister's approval) so members could ask and get answers to questions of concern to their constituents. We do not see this as weakening the role of the Board of Directors and would add a personal face to the Corporation.

MLAs told us that in recent years the number of face-to-face meetings they have had with NTPC senior management have declined significantly. Without the opportunity for MLAs to meet with and ask questions of senior managers, myths about the Corporation grow. These myths are not dispelled by reading the available professional and technical documents. One is left only to speculate about the thoughts behind the actions of the Corporation. A few years ago, the President used to meet with a committee of the Legislative Assembly and answer questions raised by members. This has been discontinued. It should be re-introduced because it serves an important function in connecting with MLAs.

Conclusions: The Corporation does a good job with formal and technical communications by way of reports such as annual budgets and plans, as well as annual reports and financial statements. These reports are available to the MLAs and the public; however, there appears to be only limited knowledge of the existence of these reports and they appear to be seldom read. The Corporation communicates with its customers through bill-stuffers, leaflets, and a website; this is similar to communications by many other utilities.

NTPC could do a better job in developing the supplier/customer relationship with NUL. The relationship at the operating level is good, but there appears to be little done at the senior management level to improve business communications.

Several of the people we interviewed conveyed that senior staff is not accessible or visible enough. Those people, in turn, were also often unaware of the communications material that is available to them. Concluding on the basis of perceptions is not always suitable, but when it comes to communications - perceptions matter.

NTPC has recently appointed a Director of Communications. This is a good first step. However, the Corporation also needs to think in greater depth about the broader meaning of communications, including how senior managers relate to MLAs and communities. Senior managers need to consider whether they invest enough face-time with other businesses, communities, and elected officials. The Panel senses that the type of communication that is needed is less technical and more personal.

Territorial Crown Corporation

Crown corporations are publically-owned business enterprises that, very often, have been established to ensure public ownership and control over a good or service with the intention of providing a public good. In this case, NTPC is responsible for generating, distributing, and transmitting an essential service for the NWT: electricity. There are constraints imposed upon Crown corporations that private sector businesses do not face. This section explores the costs and benefits for NTPC that result from being a Crown corporation. Also found here is a discussion of the role of NTPC within the GNWT group of power companies, and the mandate considerations that result from that arrangement. Our purpose in this section is to address, in a broad sense, the largest and most primary question before this Panel: are there changes that could be made to reduce the costs and improve the overall efficiency of NTPC?

Costs and benefits of being a Crown corporation: With ongoing public concern over power rates, there are some who wonder whether NTPC has become a Cadillac operation when a Volkswagen is needed. One could observe that NUL has a leaner operation, given that it carries fewer staff, but it relies on corporate offices in Alberta for many services. NTPC needs to have these services in place in Hay River and in the communities in which it operates. As a small utility, the cost of NTPC carrying all of the functions necessary to operate effectively may be more expensive than they would be for a larger company.

NTPC carries extra expenses because, as a Crown Corporation, it has additional costs imposed on it from being owned by government; it is subject to some laws and administrative rules that private companies would not have to contend with. At the same time, it could be argued that NTPC incurs fewer risks in some areas as a result of having, for example, the Government guarantee its borrowings.

Readers should also bear in mind that it would take a significant cost reduction to materially affect power rates. For example, \$10 million in cost reductions would save about 3¢ per kWh. Furthermore, cutting some Crown corporation costs would erode government policy, and impact negatively upon the overall economic value derived from these policies and from the Corporation itself.

When asked about the costs of being a Crown corporation, the President of NTPC provided a long list of costs; some of these costs are detailed below.

- Preparation of ministerial briefing notes and information for ministerial responses to constituent inquiries; the Corporation estimates that this takes about 10 weeks of senior management time and 5 weeks of staff time.

- Contributions to government policy, such as the GNWT’s draft Hydro Strategy, the Energy Plan, and the Greenhouse Gas Strategy. The Electricity Review required about 6 days of senior management time and a further 6 days of senior management and staff time to provide information. The President of NTPC is a member of the GNWT’s Energy Coordinating Committee.
- Responding to information requests and meetings resulting from government reviews. It is estimated that overall information requests cost about 1 person year of mostly management time.
- Legislation mandating equal pay for work of equal value applies to entities subject to the *Public Service Act*. The Act applies to NTPC but not to its private sector competition. The changes cost NTPC \$400,000 to \$500,000 in job re-evaluations and ongoing pay adjustments of about \$1 million a year. There are additional costs, difficult to quantify, that affect NTPC’s ability to attract and retain staff resulting in unsuccessful hiring costs, vacancy rates and turnover that result in more overtime and greater use of contractors, and ultimately place upward pressure on pay rates. Discrimination complaints (one dismissed, the second mediated to a withdrawal) costed about \$25,000 in time and legal costs.
- NTPC’s collective agreement is more suited to a government operation than a utility (e.g. Monday to Friday, 8:00 to 5:00 working hours). A utility has 24/7 operational needs. This adds to greater costs for overtime, call-back, etc.
- Superannuation for staff is under the federal government’s defined benefits plan. This is a benefit from staff attraction and retention perspectives as it provides good benefits. NTPC’s cost is expensive as the Corporation’s contributions have increased. About six years ago, NTPC costs would have matched employees’ contributions but now it has to pay twice as much as the employees’ contributions. In total, this comes to about \$1 million each year, and adds to complications with the PUB as to how and when these costs are allowable in rates. In addition, employees hired who were members of other pension plans sometimes have the right to buy-back prior years’ service.
- NTPC has to follow the GNWT’s *Financial Administration Act* (FAA) that requires it to seek government approval for borrowings, new subsidiaries, asset write-offs, collective bargaining mandates and agreements, as well as file operational and capital budgets, corporate plans etc., This is estimated to cost some four weeks of senior management time and a similar amount of middle management time.

Although the total costs of being a Crown corporation have not, and perhaps could not be, calculated, an impartial reader would surely find the costs detailed above to be substantial.

There are also some financial benefits from being a Crown Corporation. The primary saving comes from not paying income tax and, because government guarantees its borrowings, a savings in prospectus costs. Government loan guarantees also appear to have allowed lower interest and loan administration costs.

This list of financial benefits does not appear to stack as highly against the list of costs. Such a perspective can be misleading. Many of the benefits obtained from the Crown corporation do not flow to the Corporation itself, but instead flow to the GNWT and the people of the NWT.

When the Government bought NCPC in the mid-1980s, it located the new head office in Hay River. (NCPC offices had been located in Edmonton.) NTPC had to erect a new building and have staff located there (few NCPC staff moved north). While there were additional costs in making the move, the economic benefit to the Town of Hay River and to the overall NWT are important, and are difficult to estimate in exact dollar figures.

There is pride that northerners can take in owning their own power corporation and having a technically sophisticated employer available to people wishing to make their careers in this field.

When the panel looks at the corporate-wide cost breakdown, we note that 38.3 percent of yearly costs are variable, and the remainder is fixed. The revenue requirement averages 21.81 cents/kWh.

**NTPC 2007/08 Rate Composition
Corporate Wide Cost Breakdown**

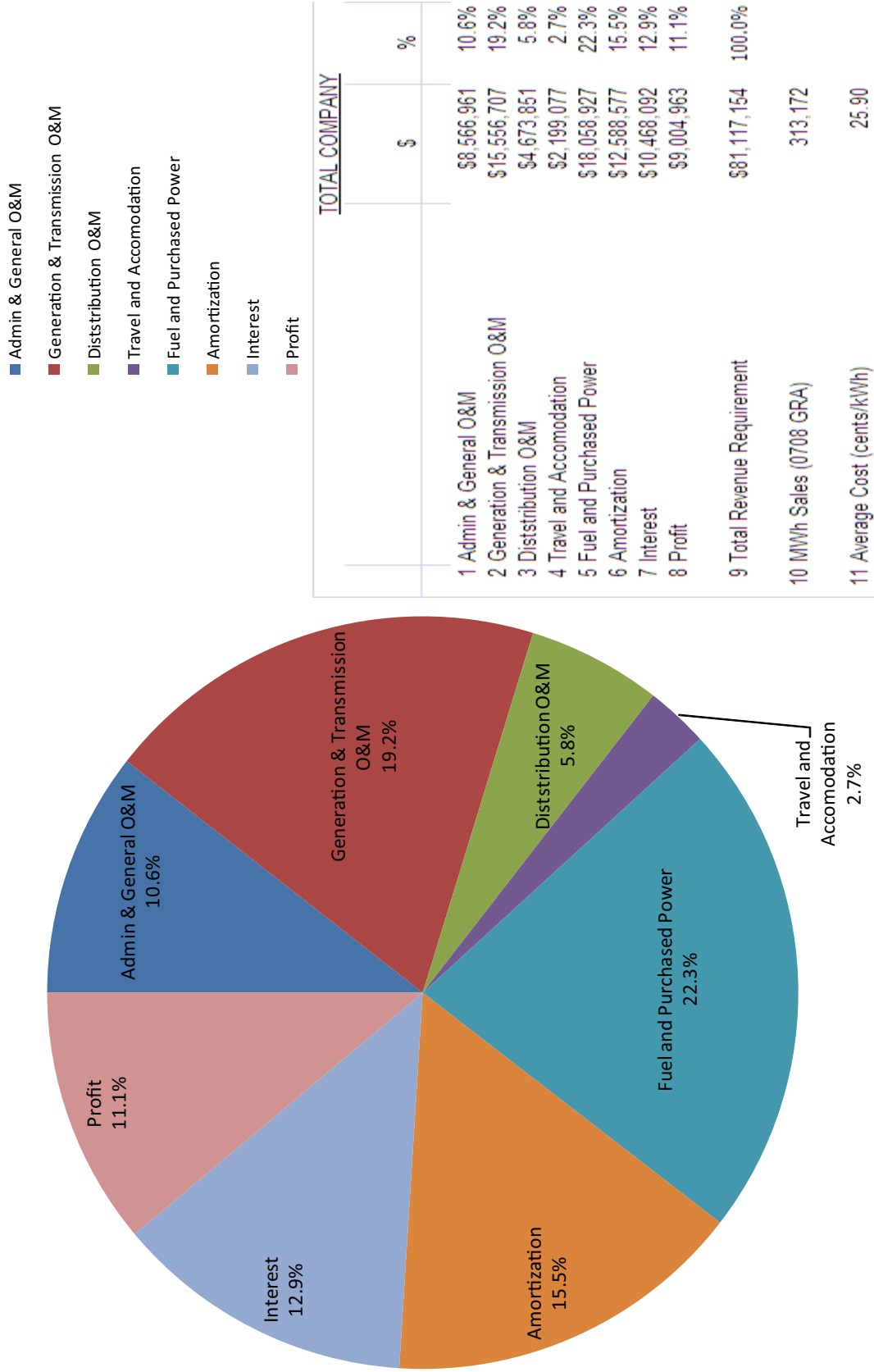


Figure 20

Understanding the implications of these figures is critical. The Corporation has to work within its mandate and operating environment. Even if one could reduce variable costs by \$10 million (a 31 percent reduction, that would likely decimate the Corporation), it would only reduce the revenue requirement by less than 3 cents.

In the end, the value of NTPC to the people of the NWT rests in its value that the Corporation adds to northern life, not only in monetary terms but also in the value it provides by being a safe, reliable, and cost manageable essential service.

Managing risk: The expansion of hydro generation involves economic and other risks. The construction of dams, hydro power generating stations, and long distance transmission lines, require an enormous amount of money. Constructing facilities to supply electrical power to mines is an attractive option for increased growth in hydro generation. That said, mines have a limited life both in terms of their reserves as well as economic effects. Hydro dams and transmission lines usually last much longer. To make new hydro facilities profitable over the longer term, there needs to be an expectation of continued sales at profitable prices into the future.

For some time we have known that there is significant undeveloped hydro potential in the NWT, including further output growth at the Taltson dam and un-developed sites elsewhere. The opportunity for system growth has attracted attention from companies outside of the Territories. Future mines and possibly the proposed gas pipeline could benefit from hydro power, and there is interest in developing hydro power for export to the western provinces.

Apart from opportunities arising from resource developments, such as new mines or pipelines, the domestic growth in NWT electricity demand is not expected to be large in the foreseeable future. On the other hand, the potential for exports to the south is expected to grow. Also, many people are interested in replacing diesel generation with hydro.

Due to the large costs involved, constructing new dams and transmission lines need more capital than most owners have readily available. Builders have to borrow from the financial markets to finance construction. Potential lenders look carefully at the costs involved, and assess whether permits and approvals are in place (which can take years to obtain); they also want to know if there are partnerships available and, most importantly, can the product be sold over time at a profitable price. Such developments carry a lot of risks until all the pieces are in place. But before all the pieces are in place, significant cash has to be spent without any guarantee of return on investment.

Rate payers should not be charged with high risk costs. The Government created a new, non-regulated Crown corporation, the Northwest Territories Hydro Corporation to examine and develop (through partnerships) the Taltson dam expansion, plus other potential hydro and new technology projects. The Government also decided to make this new company the parent of NTPC and permit it to add additional subsidiaries (with the approval of Cabinet), where there is a need for future development or other opportunities.

The Hydro Corporation has the same Board of Directors, President and senior staff as NTPC; the Hydro Corporation is operated primarily out of the Office of the Chair in Yellowknife office.

The Hydro Corporation is not regulated by the Public Utilities Board as it presently carries out no “regulated activities” as defined in the *Public Utilities Act*.

This “group” structural change appears to be poorly understood by the public. There is confusion over whether or not Hydro Corporation costs are being charged to rate payers, in part because of the close association between the two entities. The Panel has been assured by NTPC that no rate-payer money has been or will be spent on the Hydro Corporation. Any work done by NTPC is charged back to the Hydro Corporation at cost. The PUB can also review NTPC costs to verify that it carries none of the costs of the Hydro Corporation.

Merging the legal mandate with new realities: Although the Corporation must continue to operate as an efficient business, it also has to be responsive to changing public attitudes and political direction. The

Corporation faces periodic demands from the Government that owns it, a significantly changed operating environment, and changes in public expectations. It faces these challenges armed with a dated legal mandate. Clarity is needed.

For example, some years ago, the *PUB Act* required that both NTPC and NUL should have franchise agreements in place for each of the communities that they serve. Franchises were a new concept, at least for some communities; while some communities negotiated and signed agreements with utility providers, others did not. When NTPC pursued a franchise agreement in Hay River, it was directed otherwise. In recent years, the concept of franchises appears to have fallen out of favour. The Corporation continues to provide services in various communities without franchises being in place. Again, clarity is needed. About ten years ago, the *PUB Act* was amended and franchises are no longer required for in community arrangements.

Without changes to its legislation it will be difficult to make wholesale changes to its business model or approaches. It is government who has to set new directions for the Corporation by introducing changes to legislation. This would be needed in the event of broad new partnerships with the private sector.

Conclusions: In the opinion of the Panel, the benefits of being a Territorial Crown corporation far outweigh any extra costs. No income tax, the low government rate on borrowing, a regulated rate of return that contributes to government programming, and a government owned technically sophisticated employer all contribute to future business solutions that will reduce or mitigate high rates of power in the NWT.

The Panel believes that the Corporation needs a public champion who will challenge myths with facts and advocate on behalf of the valuable operations carried out by the Corporation.

The Government of the Northwest Territories would do well to decide what it wants NTPC to be. The business–social tension left unresolved in 1988, and not addressed since, continues to haunt the mandate of the Corporation.

Recommendations concerning Mandate

8. NTPC should continue its campaign to promote conservation, but should support the Arctic Energy Alliance to carry out energy audits.

9. As a regulated entity, NTPC should:
 - not undertake basic research into alternative energies
 - continue to apply alternative energy technologies that have a high probability of success and where funding is provided by other parties
 - publish its role in applying alternative energy technologies so that its role is understood by the public

10. NTPC should de-emphasize purely technical publications in favour of a more accessible approach. Articles should be short and snappy, written in non-technical language, and use attention-grabbing graphics and photographs. Most importantly, publications should be sent by electronic mail to MLAs, the media, businesses, municipalities, and community associations. Topics for electronic periodicals could include:
 - Alternative energy technologies (including feasibility, costs, and implications for NTPC and the NWT)
 - Short stories about areas where NTPC has been able to reduce costs or improve operational efficiency
 - World fuel prices
 - Simple explanations about the reasons for Corporate costs
 - Annual plant efficiencies, with reference to a recognizable bench mark
 - Power outages, with explanations for causes
 - Annual deferred cost amounts, reasons for deferral, and plans to recover costs from customers (with implications for rates)

11. NTPC should satisfy the appetite for more public engagement. Senior managers should do fewer technical presentations and consider how to better engage the public on a personal level to build better levels of trust and mutual respect. The role of most senior managers should emphasize a commitment to communications. Specifically:
 - NTPC needs to think in greater depth about the broader need for more personal communications
 - NTPC’s Board of Directors should become better known in their own right, by resurrecting periodic Board of Directors tours to communities. The Board could host a feast with local foods and soft drinks, open to all in the community. Costs would be modest, but the benefits could be significant.
 - The President should meet, or offer to meet, with the Committee of the Whole of the Legislative Assembly at the Committee’s convenience to answer Member’s questions with the Minister’s approval.
 - NTPC should open a regular dialogue at the senior management level with NUL to jointly identify issues of common concern and develop a more amenable working relationship
 - NTPC should modify its customer survey process to make the questions more relevant and obtain feedback from a wider base of customers
 - The Corporation should make communications ability a criterion for the selection of future senior managers

12. The GNWT should take a long and hard look at regulatory processes to see if they have grown beyond what was originally intended, and whether they cause unacceptable delays and/or costs.

13. In the longer-term, the most promising way to decrease power rates may be to engage in strategic business partnerships for the development of larger hydro projects to facilitate hydro exports and to allow for the cross-subsidization of rates territory-wide. The Government should try to shorten the time frame for large project approvals by developing protocols with regulators, Aboriginal partners, and others organizations involved in the development process.

Part C

Conclusions

The Panel has reviewed in detail the operations of the Northwest Territories Power Corporation. This review included the study of large quantities of documentary information, interviews with MLA and officials, and consideration of reports and documents about NTPC and other related subjects. We have included in this Report our observations even on some issues where there are no critical findings, but where we thought that the information alone would be of value to readers who are trying to better understand the mandate and operations of NTPC.

Overshadowing much of the debate is the pervasive concern about increasing power rates and the ability of people to afford this essential service, plus broader concerns about the impact of electricity rates on the present and future northern economy.

The Panel recognizes that the social and economic wellbeing of the NWT requires the most affordable, reliable, as well as the cleanest energy production possible. Overall, the Panel believes that NTPC generally does a good job in relation to its mandate. The Corporation does this in a somewhat difficult operating environment. Many examples could be cited to show positive operational outcomes. The Corporation has made significant improvements over the past few years in plant efficiencies, and its operating costs stack up well in comparison to other utilities operating similar plants. According to evidence, NTPC has reduced greenhouse gas emissions, has a good record on reliability, and its safety record is generally good. These are not minor accomplishments.

The major area that is difficult to control is the final cost for ratepayers. NTPC bears costs that similar utilities simply do not have. The fullness of such costs have not been calculated in a single figure. Readers should bear in mind that many costs result from the unique NWT circumstances that include community location, climate, and economies of scale.

We have compared NTPC's costs in small communities to those of remote plants operated by larger utilities. We find no appreciable differences. However, small community power rates charged by other utilities are significantly lower than those charged by NTPC's. There is good reason for this. Bigger utilities, with their much larger customer base, have the ability to substantially cross-subsidize remote community rates from more profitable urban areas. NTPC cannot easily cross-subsidize small community rates from larger billing pools. Also, it does not have and will not likely have in the foreseeable future a large customer base.

NTPC plays an important role in the fabric of NWT life and commerce. Rates are high, of that there is no doubt, but reducing them significantly does not seem possible without radical surgery. A cost savings of \$1 million would reduce rates by about ¼ cent per kWh. And making major cost reductions would need savings of much more than \$1 million. Even if one could reduce variable corporate costs by \$10 million (a 31 percent reduction), it would only reduce the revenue requirement by less than 3 cents.

The Corporation is not perfect. Recent issues at Snare and Bluefish raise concerns about managerial defensiveness. The Corporation could learn some lessons about connecting better with those whom it serves. It should, in this Panel's view, be more open and forthcoming on a number of issues, and deal with misunderstandings by the public quickly instead of allowing myths to grow.

Increasing power rates, poor publicity about bonus payments, and a failure to counteract negative myths about its efficiency have simply communicated corporate indifference. NTPC has suffered damage to its image. Because contentious issues were not explained, or not explained to people's satisfaction, the many good things done by the Corporation have been lost to resulting criticism and negativity.

On the communications issue, the Corporation has well developed policies and protocols. However, the prevailing corporate culture does not seem adequate to deal with underlying relationship problems or public relations. NTPC produces well thought out and informative information that is available to customers either directly through bill-stuffers or indirectly through tools such as the website. Too often initiative is required on the part of the customer to obtain information about NTPC. Staff members meet with communities and interested organizations periodically, but this doesn't seem to be enough. On a technical and quality of content basis, the Corporation's communications plans work. What seems to be lacking is a sense that senior management is connected and committed to playing a leadership role in the fabric of life in today's NWT. There appears to be a limited interest in or ability to network with others who are opinion makers.

Whether this is a problem of individual personalities or a product of the much guarded view that NTPC is, first and foremost, a business, is not clear. However, complaints continue and dissatisfaction with NTPC's communication is still raised as a major issue. This strongly points to the need to rethink approaches. The Panel wonders if the complaints about communication embrace much more than the technical aspects of information flow. Sometimes people get much more out of face-time with senior people than they do from a report or a pamphlet, even if the face-time deals with more down-to-earth issues affecting and concerning individuals and communities.

Most of the regular MLA's had concerns about a lack of communication from the Corporation. MLAs readily admitted that they were not as well informed as they could be about the electricity generation and distribution issues, costs, rates and challenges facing NTPC. This is the case even though a large volume of technical and professional information is available to them. This again points to the technical nature of NTPC's communications rather than closer personal contact.

The Panel noticed that there is no obvious pride in NTPC ownership by NWT residents. Some groups are developing plans of their own for future energy developments, albeit these might be quite a few years away from operation. The sense we gathered was that communities want to do these projects on their own without NTPC. While not all of electrical generation and distribution is in the hands of NTPC, the system as a whole would be fragmented by individual or community developments that remove constituent parts from the system. Given the small size of NTPC's customer base (only 18,000) we wonder if fragmented systems would be economically viable, especially as small utilities would be competing in the same labour pool.

The Corporation has a big job to do to get the public back behind it, and generate or re-establish pride in ownership.

We suggest that NTPC, at the highest levels should meet with regulators to iron out any lingering issues and rebuild a solid working relationship. Relationships between the Corporation and various regulators should be based on mutual respect and trust; or, to put it colloquially: cordial but not cosy. Their respective roles require them to cooperate effectively. The Panel considers it highly important that, for future developments such as new hydro projects, the Corporation do as much as possible to reduce any existing adversarial relationships.

In the longer term, the Panel wonders if strategic partnerships to develop alternative energy projects, may offer some cost (and GHG emission) reductions. However, these partnerships and projects can take a long time to reach fruition. They require important decisions along the way about who pays, evidence of proven technologies, and development of necessary supporting infrastructure. In particular, partnerships to jointly develop presently untapped hydro potential could provide resources for the cross-subsidization of residential and commercial power rates. Unless a way can be found to speed up the development process, it is hard to see how the Corporation and the NWT as a whole can benefit from alternative energy in the immediate term.

Remote diesel-dependent communities in places such as northern Manitoba or small island communities in Newfoundland, only have lower rates because they are subsidized by a larger population base in the rest of the province. The NWT has no such large population base.

The GNWT should review the role of NTPC as a Crown Corporation as part of its public policy initiatives to further develop NWT hydroelectric resources for the overall benefit of the NWT. British Columbia, Manitoba, and Quebec offer examples of provincial governments that have successfully developed hydroelectric resources through their Crown corporations and produced considerable economic benefit in return.

NTPC is a relatively small utility company compared to others elsewhere in Canada yet its management structure is similar to the larger entities. We wonder if there is an opportunity to rationalize the structure (and possibly make saving) by combining the President's position with that of the Chairman (on a full-time basis) and base the job in Yellowknife where it would be closer to Government and the MLAs. In Hay River, some of the executive responsibilities could be incorporated into the Chief Operating Officer position making it the senior person based in Hay River. If the Corporation considers such changes, they could be made after the next natural changes in senior staffing when people retire.

Recommendations

Recommendations concerning Operational Efficiency

1. NTPC should engage external specialists in a thorough review of its fuel handling programs.
2. NTPC should engage external specialists in a thorough review of its safety programs and culture.

Recommendations concerning Corporate Efficiency

3. NTPC should improve its capital project scope identification and cost estimating processes in order to reduce scope creep and cost overruns after initial approval by the Board of Directors.
4. Given the large number of trips taken by NTPC staff, NTPC should strengthen its internal controls over travel by ensuring that all trips are pre-approved and that all travel claims (including those of management) are reviewed by supervisors.
5. The NTPC pay policy should be made more specific as to how the results of Hay Group reporting are to be applied within NTPC, and in particular greater specificity is needed for the target range that the Corporation uses in establishing senior management salaries.
6. NTPC should expand the disclosure of its annual report to include enhanced details of all staff salaries, including bonuses and benefits.
7. At the next change of senior management, NTPC should consider reducing senior management by at least one position by combining the President and Chief Executive Officer's responsibilities into a Yellowknife-based Executive Chair/CEO and a Hay River-based Chief Operating Officer. The COO would be the local senior officer, with commensurate delegation of some functions to subordinates.

Recommendations concerning Mandate

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Appendix 1

NTPC Vision, Mission and Values

Our Vision

- Peers and stakeholders will recognize us as one of the best managed and operated utilities in Canada based on our record of providing environmentally sound, safe, reliable, cost-effective energy and related services in the territories.
- Our shareholder will benefit from the economic returns of our profitable, financially strong company.
- Our customers will have the tools and knowledge they need to understand energy consumption, drivers of consumption and how to conserve energy.
- Communities will see us as preferred partners, contributing to the future energy plan for the Northwest Territories and assisting them to complete their local energy plans.
- Partners will join with us to be major contributors to the development and operation of new energy resources in ways that meet the North's unique environmental needs.
- Residents of the Northwest Territories and our Shareholder will support the benefits of a business model for NTPC that provides least-cost electricity to customers in the Northwest Territories.
- Employees will see us as a great place to work – innovative, proactive and driven to meet the expectations of our shareholder, customers and communities.

Mission Statement

Position NTPC for future sustained, profitable growth through:

- Customers – Providing excellent value and service to our customers, delivering them reliable service and fostering efforts to conserve energy.
- Communication - Establishing and advocating strategies which support open, timely and informative communication to build the support of customers, employees and other stakeholders for the achievement of our corporate Vision.
- Return – Improve efficiency in order to control costs, over the long term while consistently delivering 100 percent of forecast net income.
- Employees – Strengthening the Corporation by emphasizing employee safety and development by encouraging and supporting a workplace where employees feel valued and recognized for their efforts.
- Environment – Demonstrating environmental leadership, implementing cost-effective energy conservation and alternative energy programs and maintaining our facilities to a high environmental standard.
- Partnerships – Pursue partnerships to develop alternative energy initiatives as and when they become available and we are adequately resourced.
- Business Model – Creating a business model to deliver least-cost electricity to customers, recognizing both monetary costs and non- monetary costs such as environmental and other social costs.

Our Values

In achieving the Corporation's Vision Statement and objectives, we will endeavour to:

- be cost effective in the utilization of all resources, always remembering that we are spending the customer's money;
- strive to increase shareholder value in the long-term;
- be responsive to our customers and their changing needs;
- act ethically and honestly treating employees, customers and others with fairness, dignity and respect;
- commit to the safety of our employees and the public;
- respect and protect the environment in all our activities to ensure a sustainable environment for the NWT; and
- communicate in an open and timely manner.

