



CITY OF WHITEHORSE

2121 SECOND AVENUE WHITEHORSE, YUKON Y1A 1C2 TELEPHONE: (867)667-6401
FAX: (867) 668 8386 Municipal Services



24 November 2006

Yukon Utility Board Hearing Yukon Energy's 20 Year Resource Plan, 2006-2025

Comments from the City of Whitehorse

In this new Resource Plan, Yukon Energy Corp (YEC) is facing a shortfall in generation capacity. Interestingly, this appears very similar to the concerns raised during the 1992 Resource Plan when forecasts of significant capacity requirements were also made. In response to their submissions of the 1992 Resource Plans by YEC and Yukon Electrical Corporation Ltd. (YECL) a number of recommendations came from the Yukon Utility Board (YUB) Hearing that are still valid today, and yet still need to be implemented if not expanded. Specifically, we note recommendations regarding:

- Demand Site Management Programs
- Electrical Heat Systems Not Be Installed
- Wind Generation
- Independent Power Producer Opportunities

Of particular note, in 1992 there appeared to be no recommendation concerning the life of the existing diesel turbines, yet less than 15 years later, their upgrade or replacement is of significant importance.

Environmental and Health Impacts and Costs

In both YEC's 1992 and the 2006-2025 Resource Plan and what has been the basis of concern for YUB and YEC's overall operational plan the desire is to minimize costs which would have to be passed onto the rate base. These costs specifically mention only the capital and day-to-day operational costs, with no consideration made then or now to Environmental Costs.

First and foremost to the City of Whitehorse and the people who live, work and visit here, the use of diesel turbines in the centre of the city to meet the energy shortfall requirements now or in the future, will have a negative impact that must be addressed. To extend the life of the existing diesel turbines or to possibly replace them with new bigger units will have significant environmental impact relating to:

- Air pollution
- Noise pollution
- Greenhouse Gas Production (GHG)

Unlike the use of clean energy alternatives, the diesel turbines have a significant environmental and health impact. People who live in urban areas are experiencing the negative health impacts associated with pollution, and the operation of these diesel powered turbines will contribute to these problems. More specifically, to operate them within the centre of the city, will further exacerbate that problem in the Riverdale and downtown core, particularly considering the air and temperature inversions that occur often during the winter months.

From a security and an emergency measures perspective, such as in the event of a dam failure, or acts of terrorism, relocating the backup diesel plant away from the dam, and away from the downtown core to another location, should have been considered by the Resource Plan.

Recommendation: YEC and YUB specifically recognize that the use of these diesel turbines not only be discouraged, but that their relocation out of the downtown core of the City of Whitehorse be considered, particularly if the Mirrlees Life Extension Project proves not to be effective, and new much more expensive diesel turbines are required.

The City does acknowledge that the use of diesel turbines may be necessary from time to time in emergencies. However, the City notes that from YEC President David Morrison's perspective, the diesel turbines are to be used only as backup. This comment does not go far enough as the use of these diesel generators may be used as backup when surplus hydro power is not available to supply major industrial users like the new mines that may soon come on-line near Carmacks. (Comments in the June 2006 copy of the Yukon News and in the Hearing.)

Recommendation: Diesel turbines located in the downtown core of the City of Whitehorse are to be specified for use only in the case of emergencies, and are not to be used to offset power supply issues when sufficient hydro generation capacity is not available.

The use of diesel turbines would appear not to be sustainable in the long term, particularly as oil supplies decline and prices increase over the long term, and the Resource Plan does not address this possibility. With the Plan extending beyond 20 years, this issue becomes all the more important.

Recommendation: The Resource Plan should consider the security of the long term delivery of fossil fuels, specifically in the wake of declining oil reserves.

Recommendation: Diesel turbines should be built to be as energy efficient as possible, whether new ones are constructed, or if the lives of the existing turbines are to be extended.

Recommendation: Diesel turbines should be designed and constructed so that their operation minimizes noise and air pollution whether new ones are constructed, or if the lives of the existing turbines are to be extended.

In 2003, the British Columbia (BC) Utilities Commission responded to BC Hydro's Vancouver Island Generation Project, a partial copy of which was provided by YEC for review, and they recognized the value and the importance Clean Electricity, and the need to consider environmental costs in addition to capital costs when reviewing energy supply options. They noted that the environmental costs will change depending on how green the energy supply is.

However, use of BC Clean Electricity seems to speak only to the cost of green house gas production, and does not speak to the costs associated with air and noise pollution, particularly to those people who live in the urban area of Whitehorse and who are directly impacted by such pollution.

Recommendation: YUB and YEC incorporate the environmental costs associated with air and noise pollution and green house gas production when prioritizing and constructing projects.

Summer Hydro Surplus Negatively Impacts Hydro use in winter

The City recognizes the benefits associated with maximizing the use of hydro power particularly to take advantage of the major industrial customers such as the Sherwood Copper's Minto Project. Certainly, the current available surplus of hydro power that is available in the summer and fall should be maximized, but the use of hydro power all year round will have a significant negative impact during the low flow periods that occur during the winter and spring, or that may occur when water levels drop below normal as a result to changes in precipitation levels which may occur more frequently due to impacts of Climate Change.

Recommendation: The City supports the Carmacks-Stewart Transmission Project.

Recommendation: The City supports the Aishihik Third Turbine, and that its design should include components that would ensure that all three turbines operate in away that will avoid the catastrophic failure that occurred in January 2006.

The City agrees with the Resource Plan comments that if power is being largely generated by diesel in Whitehorse, then the same power could be generated at the industrial user's site (page 37, Section 5.0, of the Resource Plan Overview) without the associated line losses resulting in cost savings, less pollution, and less greenhouse gas. Further, if the power is generated at the site, the negative environmental and health problems would not directly affect the people who live, work and visit the City of Whitehorse. As suggested previously, this Plan specifically addresses only the financial cost of operating the diesel system in Whitehorse, and inappropriately does not address the negative environmental and health costs associated with its operation.

Recommendation: Large industrial users, like mines, should ensure that they supply their own power when excess hydro power is not available.

The City is aware that YEC is considering refurbishing or replacing the existing diesels in Faro. The City is not aware of the location of these diesels relative to the people who live, work and visit there, but it may be advantageous to consider that option, rather than create power in Whitehorse through diesels. But the concerns related to operating diesels as it relates to pollution and green house gas production is applicable to upgrading the diesels in Faro as well.

Recommendation: YEC pursue the advantages and the financial and environmental costs of activating the diesel turbines in Faro.

Independent Power Supply and Net Metering

The City notes that the current Resource Plan does not effectively address partnering with Independent Power Producers (IPPs). Recent improvements in technology relating to green power supplies, the development of the green power equipment, the expansion of green power expertise in the private sector, and the availability of federal and/or territorial grants that may be available for green power supply, now offers opportunities to create IPPs from not only businesses but from individuals as well and that they have not previously been considered as cost effective. The Resource Plan should consider approving the implementation of net metering, where some consumers could have the opportunity to sell power back to YEC if appropriate.

The City also notes that the BC Utilities Commission's Resource Planning Guidelines that was issued in December 2003 includes changes to Section 45 of the BC Utilities Commission Act which incorporates the following:

45 (6.1) c) a plan of how the public utility intends to meet the demand for energy by acquiring energy from other persons, and the expenditures required for that purpose.

Recommendation: The 1992 YUB Recommendations respecting IPPs should be implemented.

Recommendation: YUB and YEC consider the large industrial user (i.e. mines) as a potential IPP and explore partnering opportunities, or to enter into agreements to purchase power directly from them if additional power is necessary in the short or long term, or in the case of emergencies, and that such negotiations and coordination include Yukon Electrical Corporation.

Recommendation: YEC implement net metering and work cooperatively with YECL on such policies.

The City notes that the 1992 recommendations references YECL's 6.2 MW of dependable capacity concerning the McIntyre Creek Power project appears to be incorrect, as YECL agrees with YEC that the total capacity appears to be less than 1 MW of capacity.

Use of water during the winter months

Historically, when YEC generates hydro power during the winter months, the City of Whitehorse experiences negative downstream impacts such as flooding by the Yukon River within the Marwell area due to ice jams. Further, the catastrophic failure that occurred in January 2006 also points to the negative impacts of glaciation on the Yukon River shoreline and river bed due to erosion, and this could be of particular concern at the abutments and piers of the Robert Campbell Bridge. YEC stated that they are now investigating the downstream impacts of increasing the use of the Whitehorse hydro plant during the winter months should opportunities such as increasing the water elevation of Marsh Lake be feasible. YEC noted that this option is not currently being investigated and this could have negative long term impact, particularly if using diesels during the winter occurs more frequently.

Recommendation: The City supports YEC's study on the technical feasibility of increasing the operating capacity of the Whitehorse Hydro dam during the winter.

Recommendation: YEC should continue with its feasibility study to determine if raising the elevation of Marsh Lake is technically and financially feasible.

Demand Site Management Programs (DSM)

The 1992 YUB decision identified 14 recommendations concerning DSM, which given the available hydro surpluses, over the past 15 years have not been implemented or expanded by YEC. To quote page 102 of the YUB 1992 decision:

The Board recognizes the importance of implementing DSM activities that will be cost effective in deferring expensive supply options. The Board also recognizes Whitehorse's concern that DSM activities should be implemented to take advantage of opportunities that exist today that will be lost if programs are delayed.

With the recent announcement of the power supply agreement with the Minto Project, the 1992 YUB recommendations on DSM to deal with shortages of surplus power are all the more appropriate today. As DSM programs are implemented on a larger scale, more hydro power during peak times would be available for sale to large industrial users such as the mines.

YEC's role with DSM needs to be expanded and recommendations from YUB's 1992 Decision needs to be followed up and expanded, particularly to reduce peak demands during the winter. Lowering demands, particularly during peak periods is important, even though it will reduce YEC revenue in the short term, it will save the ratepayers in the long term by delaying or deferring major capital projects. It does not make sense to wait until there is a shortage of hydro power and that diesel turbines have to now operate, before implementing DSM programs. These programs take time to reduce use so it is recommended that they be implemented now, as no progress has been made over the past 15 years. It is recognized that YEC needs to work cooperatively with YECL and Energy Solutions Centre.

The City notes that the use of Smart Meters and varying power consumption rates similar to what is now being introduced in Ontario may be applicable for the Yukon.

The City also notes that the BC Utilities Commission's Resource Planning Guidelines that was issued in December 2003 includes changes to Section 45 of the BC Utilities Commission Act which incorporates the following:

45 (6.1) c) a plan of how the public utility intends to reduce the demand for energy and expenditures required for that purpose

Recommendation: YUB require the planning and implementation of Smart Meters and DSM Programs that direct YEC to promote and provide incentives for ratepayers to use less power during peak times, particularly during the winter months when there is no surplus hydro power.

Recommendation: YUB require YEC to work cooperatively with YECL and Energy Solutions Centre on implementing DSM programs, including the use of Smart Meters that will encourage users, particularly large power users such as the City, to reduce power use.

YUB's 1992 recommendation of discouraging use of electrical power for heating purposes, other than as an option for secondary power sales should be implemented. Currently, new commercial and residential properties are installing electrical heating systems, so the problems associated with electrical heating supplies is being repeated 15 years later. This further exacerbates the problem associated with YEC's current shortfall of hydro power during the winter, and particularly if it results in the operation of diesel turbines beyond emergency situations.

Recommendation: YUB requires a specific recommendation that prohibits the installation of electrical heaters as their primary heating source, unless long term surplus of hydro power during the winter or other low flow conditions can be guaranteed by YEC.

YEC's Resource Plan speaks to the advantages gained by YEC making secondary power sales available at a cost effective rate. Secondary Power sale was a program offered by Energy Solutions Centre and YEC to promote the use of excess hydro power while reducing GHGs at the same time. A number of businesses including the City bought into the GHGs reduction plan by installing and operating standby electrical generators. The Resource Plan notes that with recent changes approved

by YUB, YEC has gained over a \$1 million in extra revenue at very little cost, having passed on those costs directly to the business and YECL. The cost effectiveness of secondary power plans as a green house gas reduction initiative is no longer viable, and particularly, is not viable if a business can only access the significant surplus power available during the summer. The City notes that promoting Secondary Power use increases power consumption and does nothing to reduce power consumption which is the intent of DSM programs. If DSM programs were implemented, YEC would be able to provide more secondary power supplies, or more hydro power to the industrial users.

Recommendation: YEC use the surplus funds being received from secondary power sales to implement DSM programs that reduce power usage.

Green Power – Wind Generation

The 1992 YUB recommendation specifically speaks to researching and developing wind power, as a clean energy opportunity to diesel generated energy. YTG's Climate Change Action Strategy specifically speaks to the advantages of reducing green house gases that has been gained by the Haeckel Hill wind turbines. A submission to the Canadian Professional Engineers by the Yukon Association speaks to the fact that wind generation is feasible. Further, more wind turbines are being installed throughout North America as wind technology improves, funding opportunities are expanded and the cost and environmental benefits of providing clean, renewable energy are recognized.

Certainly, with the current hydro surplus, and the poor isolated location of the 2 turbines, makes operation of these 2 wind turbines on a continual basis difficult and appear more costly. But it is a clean energy alternative to diesel energy, particularly in the winter when winds tend to be higher and the demands for power exceeds hydro capacity, and is sustainable over the long term.

The City recognizes that wind generation does not directly improve capacity, but does provide an alternative energy source rather than operating diesel turbines even on a small scale. The use of wind generators may enable water levels to be kept in storage for peak power use, particularly during low flow periods, or when wind may not always be available. It is interesting to note that a comment made by YEC during the Hearing noted that to reduce diesel operation "*even by a few kilowatts or megawatts helps*".

Recommendation: YEC's resource plan recognize that wind generation offers an environmental and cost benefit to operating diesel turbines, particularly during the winter, and that their use be included over the short term, and expanded over the long term.

This concludes the City's submission. Please contact the undersigned regarding any questions or clarifications regarding our submission.

Sincerely

The City of Whitehorse

Wayne H. Tuck, P.Eng.
Manager - Engineering and Environmental Services

c: Dennis Shewfelt, City Manager