

Yukon Energy Corporation
2012-2013 General Rate Application

Heard before the

Yukon Utilities Board

November 12 – 14, 2012

Final Argument of the Yukon Conservation Society

Introduction

Please accept this document as the Yukon Conservation Society's (YCS) Final Argument as an intervenor in Yukon Energy Corporation's 2012-2013 General Rate Application.

In our submission, YCS questions past decisions made by the Yukon Energy Corporation, and questions the path YEC is leading the Yukon down towards the future.

YCS then presents a viable future scenario that does what ought to be the mandate of our public utility – facilitates the immediate shift away from fossil fuel use towards the development of diversified renewable energy sources to displace fossil fuels currently burned for electricity generation, for space heating and eventually also for transportation.

Table of Contents

Introduction.....	2
Mt Sumanik Wind Assessment Feasibility Study Final Report, January 2009	4
Mayo B – prudent decision or missed opportunity?	5
YEC’s lack of understanding and negative opinion on wind energy and resulting negative public portrayal of wind.....	5
YEC’s negligence of existing wind facilities	6
The changing perception of the “Obligation To Serve”, and how it no longer needs to trap us into a fossil-fueled future	6
Liquefied Natural Gas (LNG) – merely a fossil fuel substitution with no plan for transition to renewables, only an obstacle to their development.....	7
The Hydro-Diesel Cycle Problem	8
Fossil Fuel, Climate Impacts, and the Yukon as a Renewable Energy Industry Leader	9
Wind Energy and the Winter Heating Load	9
Electrical Thermal Storage (ETS).....	10
Sustainable mining, sustainable living and a legacy of renewable energy infrastructure	12
Appendix A	
YCS comments on Yukon Energy Corporation’s 20 Year Resource Plan.....	13

Mt Sumanik Wind Assessment Feasibility Study Final Report, January 2009

After our cross examination, YCS still has serious doubts that YEC made a prudent decision to proceed with Mayo B when it had this positive report on the wind energy potential of Mt Sumanik in its hands.

YCS stands firm in our assertion that a wind energy project on Mt Sumanik was comparable and that building it would have been a better decision than Mayo B as it would have resulted in more energy output at a lesser cost. A Sumanik wind project would have been a wiser use of federal taxpayers' and Yukon ratepayers' money, and would have diversified our energy sources and increased winter capacity.

We are thankful that YEC eventually released the report and that it is on the public record as IR YCS-YEC-1-1. However, the report as released contains significant redacted sections that presumably remain confidential because YEC considers that information proprietary.

Because wind energy would be a feasible, useful and important addition to our winter capacity (an assertion supported by the wind study), YCS recommends that the Yukon Utilities Board request the complete wind study from YEC. The YUB is not in competition with the public utility, nor is it a potential IPP. Therefore the release of the complete report including the redacted information, solely to the YUB, would not put the public utility at risk of financial harm. The YUB as the regulator is tasked with ensuring that YEC is making fiscally sound decisions. Seeing this report in its entirety will enable the YUB to better assess whether Mayo B was in fact a prudent decision in light of this wind alternative, as well as to determine whether the shift in (limited) wind focus from Mt Sumanik to Ferry Hill was and is justified.

During YCS's cross-examination, YEC panel members acknowledged that wind resources in the Yukon, and specifically on Mt Sumanik, match the seasonal demand for electricity and heat. Wind resources are directly proportional to the load, there is more wind in winter when electrical and heating demand are highest also described as "seasonal matching" (transcript 361 lines 8-12).

The YEC panel also admitted that hydro resources do not match the seasonal demand, and in fact are inversely proportional or opposite (i.e., hydro resources and hydro generating capacity are the greatest in summer when the demand for electricity is lowest).

(transcript page 373 lines 8-12) Mr. Osler:

"We also have a disconnect between the load and our hydro resource, and we have the greatest amount of hydro resource in the summer when we have the least load and the greatest amount of load in the winter when we have the least hydro available.

Yet still, what the YEC panel failed to recognize or acknowledge is that continuing down the status quo road of an exclusive hydro-fossil fuels mix, is indeed a trap – one that we currently find ourselves in. But the Yukon Government and the Yukon Utilities Board can help chart a new course for Yukon Energy Corporation.

YCS recommends the Yukon Utilities Board request the complete and un-redacted Wind Assessment Feasibility Study Final Report January 2009 to assess whether YEC's shift of limited wind focus from Mt Sumanik to Ferry Hill is justified.

YCS recommends the YUB direct Yukon Energy Corporation to undertake the recommendations outlined in the Wind Assessment Feasibility Study Final Report January 2009 to move forward a wind project on Mt Sumanik.

Mayo B – prudent decision or missed opportunity?

Mayo B was not shelf ready at the time it was proposed for the federal green energy infrastructure dollars. Even when it was under YESAB review, decisions on the design of the project, penstock or canal for example, were still being made.

YCS feels that YEC should not be allowed to bring Mayo B into the rate base until that new infrastructure has proven its worth.

The panel was unable to answer questions about Mayo B's performance and energy output during cross-examination. This is distressing since the in-service date of that project was December 2011 – nearly one year ago. The panel's responses to our questions on Mayo B were not sufficient. Why is there no data for the energy output of that project? Yukon people deserve to know how that project is functioning before we are asked to pay for it.

YCS recommends YUB not allow \$35 million for the Mayo B project to be added to the rate base until the project can be shown it is performing to expectations.

YEC's lack of understanding and negative opinion on wind energy and resulting negative public portrayal of wind

YCS now knows there is at least one error on a subjective and widely distributed (during the brief summer "consultation" around the plan) graph comparing near term supply options in the 20-Year Resource Plan. The YEC panel admitted it is an error on the graph where it incorrectly shows wind fully utilized being "low" in affordability (transcript page 381 line 25).

Further, YEC panel stated that it didn't make any sense to build a capital-intensive 25 year project to serve a projected 5 year mining load (transcript page 377 lines 9-11). So if

it doesn't make sense, why did YEC chose to portray wind in the context of this load scenario, unless it simply wanted to make wind look unfeasible and unreasonable?

YCS stands firm that it doesn't make sense and is unfair to imagine a renewable project being constructed for a high-risk short-term load, without imagining all the ways that renewable energy could be sold and used in the long term as a replacement for fossil fuels in space heating and transportation.

YEC's negligence of existing wind facilities

As YCS's exhibit C-5-7 Haeckel Hill Wind Energy Production Over Time shows, the existing wind facilities in the Yukon were performing well, but then began to perform poorly since 2003. YCS suspects this poor performance is a result of purposeful neglect of wind facilities, and is another tactic – whether conscious or otherwise – employed by YEC to sway public opinion to match its own – that wind is not viable or feasible in the Yukon.

YCS would like to understand why YEC has not given its wind facilities proper care and attention. As the YEC panel admitted that wind is valuable for winter capacity, the YUB should direct YEC to give the wind facilities the care and attention afforded to all other generating facilities.

YCS recommends that the YUB direct YEC to give its wind generating facilities the care and attention afforded to all other generating facilities

The changing perception of the “Obligation To Serve”, and how it no longer needs to trap us into a fossil-fueled future

The Yukon Conservation Society has long held the belief that Yukon Energy Corporation is incorrect in its assertion that YEC has a duty to serve any load whatever size and regardless of everything if that customer connects to the grid.

Thankfully, we have seen YEC change its tune over the past months. Firstly, in response to the Yukon Environmental and Socioeconomic Assessment Board's (YESAB) recommendations report for Victoria or Eagle Gold Project which contains a section speaking to the proposed mine's electrical requirements and how that, relative to the current supply and demand landscape, electricity would not be able to be supplied to that mine without a significant increase in rates to electricity customers.

Leading Edge Projects brought forward two exhibits that showed YEC representatives stating industrial customers would not be served if doing so would negatively impact ratepayers.

Another example of YEC's reconsideration of the "obligation to serve" is found in Yukon Energy Corporation's Strategic Plan 2012-2013. On pages 9 and 10, YEC briefly touches upon the Obligation To Serve. It reads:

"Regulatory principles and precedent maintain that Yukon Energy has an obligation to serve customers that request service within its franchise area that are willing to pay their costs to connect to the grid.... *The issue gets tested on a case-by-case basis and may be limited by capacity, feasibility or risk factors.*" (Italics added)

The obligation to serve puts YEC in a very difficult position in terms of planning for the future. YCS sees high-risk, short-term industrial customers as loads that YEC should not be required to serve. In our view, it is the public utility's position on having a duty to serve any and all loads that has resulted in the 20-Year Resource Plan's LNG-Is-The-Only-Option conclusions repeated throughout.

YCS urges to YUB to support YEC in its new and more appropriate interpretation of the Public Utilities Act, that the YUB will help determine whether it makes sense to serve new loads.

YCS urges the YUB to recommend to Yukon Government that the responsibility to work with new industrial customers to ensure power requirements must be shouldered by government – not the public utility and by extension the ratepayers.

Liquefied Natural Gas (LNG) – merely a fossil fuel substitution with no plan for transition to renewables, only an obstacle to their development

Despite what YCS heard during our cross examination – that LNG is not a done deal and that it is one of several options under consideration, it appears that YEC is putting all its eggs into that basket – and weaving the basket so that in fact LNG is the only option that would fit into it.

A shift by Yukon Energy Corporation from diesel generators to LNG generators would represent a step backwards. It is too simplistic to argue that because natural gas burns cleaner than diesel, it is therefore better.

As discussed in our comments on YEC's Resource Plan, the lifecycle emissions and impacts of natural gas do not support LNG as a clean alternative. Contamination and emissions from extraction, refinement, liquefaction, transportation and storage make LNG as bad as the other fossil fuels for the environment and for the climate. The current common method of hydraulic fracturing or fracking to extract shale gas uses and contaminates vast quantities of fresh water and causes fugitive methane emissions that contribute to climate change.

Further, current costs with the inclusion of transportation have LNG near par with diesel, so cost is not a factor.

As YCS learned in our cross examination of the YEC panel, the public utility has admitted that entrenching our system in LNG would effectively prevent the development of renewables. The panel was also unable to explain how their proposed LNG Transition would actually result in a transition to renewable energy (transcript pages 399-402), rather than simply a substitution to another finite volatile commodity-priced fossil fuel justified by economic projections and the premise the utility is required to service any load however large regardless of ratepayer impacts.

It is disturbing that during the cross examination, the YEC panel could not describe how LNG would in fact be a transition fuel – despite LNG being sold as such. In fact, the panel reiterated that LNG would be detrimental to the development of renewables (transcript page 399 lines 24-25, page 400 line 1), would defer their development and would affect the evaluation of renewables (transcript page 400 lines 3-5).

Despite the YEC Panel not making any commitment to LNG at the Hearing by stating LNG was just a hypothetical project under consideration, only a week later YEC representatives were at the Geoscience forum speaking to how the public utility has grand designs of becoming a consumer and distributor of liquefied natural gas.

This should not be the business of Yukon Energy, as it would prevent the development of truly clean energy, and would set up the Yukon for a dangerous dependency on fossil fuel extraction.

The Hydro-Diesel Cycle Problem

Historically the utilities in the Yukon have met growing electricity demand by using a hydro-diesel combination. Hydro dams are expensive to build and in order to have an economy of scale they need to be large: typically in the order of 50 MW or more.

Excluding mines, the load growth will usually be in the order of 1 MW annually so it will take many years to make a large hydro project pay off. So in the meantime the growing load has been matched by using the most flexible and less capital-intensive diesel plant to generate new electricity. When the electrical load would finally grow large enough then it would become economical for a hydro project to be built.

In the past the hydro-diesel method of meeting load growth for a utility was cost effective and desirable when fossil fuel was cheaper. But fuel prices have gone up and are expected to continue to do so and this adds a financial risk to the hydro-diesel combination. As we are aware using diesel at over \$0.30 kWh is causing upward cost pressure on ratepayers. Yukon Energy's continued trend to apply the hydro-diesel combination to meet new load growth is very wasteful because it will always result in spilling unused hydro in the summer (lost revenues) and using diesel on the margin in the winter (added costs).

Fossil Fuel, Climate Impacts, and the Yukon as a Renewable Energy Industry Leader

We are all well aware of the climate impact of consuming fossil fuel. As a society we should be planning to move away from fossil fuel and make renewable energy our new normal. On the world stage little progress is being made, as each country wants others to shoulder the commitment to reduce GHG emissions. But the great problem in many developed nations and jurisdiction within them is that their economies are entrenched in the extraction of fossil fuel (e.g. Alberta and Alaska).

As Yukoners, we have an advantage with a small population base and relatively little dependency on the fossil-extraction industry to support our economy. We are presently importing fossil fuel for most of our energy needs but we have also a very large untapped reservoir of wind and hydro potential (also solar geoexchange, etc.). We also have a huge opportunity to use renewable energy to replace heating oil for space heating, and to use electricity for local transportation.

We have a financial advantage as a northern jurisdiction where we can attract funds to develop innovative renewable energy projects. We also have First Nation Governments that are interested in developing a sustainable economy. A sustainable economy can only be met by developing local renewable energy sources like wind, solar and hydro.

In the Yukon we have an important knowledge sector that we can nurture to develop a renewable energy industry. We have the Yukon Research Centre and the Cold Climate Innovation group that are focused on new technology development and have access to important outside funding. We also have the Energy Solution Centre and Yukon Housing who have set national trends in innovative ways to implement energy efficiency. And from our population base we have experts in wind, solar, hydro, geothermal, building technologies, communications, etc.

The Yukon has the potential to become a leader in developing a renewable energy industry in Canada. Yukon Energy needs to play a better role both as a leader and a partner in this industry.

Wind Energy and the Winter Heating Load

Although hydro provides firm reliable power, in the Yukon the hydro system is seasonally inefficient. The seasonal energy availability of a hydro dam does not follow the winter load: in the summer there is always much more hydro energy available than the load requires; in the winter the hydro potential is greatly diminished by the freeze-up of the water when the load demand is highest. As a result, the hydro reservoirs have to be oversized in order to meet the maximum winter load. This oversizing means that there is always much more water spilling in the summer than can be used. These are lost revenues for Yukon Energy.

Wind energy is more abundant in the winter when the grid load (mainly heating) is highest. Wind is a perfect match for hydro since water can be stored and hydro generators can respond to fluctuations in the wind energy production. An example of this is the Aishihik facility, which has a large reservoir and response capability to stabilize wind power fluctuations. When hydro cannot meet the larger fluctuations, there is the diesel plant to accommodate the system fluctuation.

An important case comparison to the above is the Kodiak Island wind-hydro-diesel-battery system (<http://www.kodiakelectric.com/generation.html>) in Alaska, which provides 95% of the island's electricity with wind and hydro.

Another the advantage of wind energy is that it can be added in smaller increments at a lower cost than hydro. As Yukon Energy has stated, new hydro will cost closer to \$0.35/kWh whereas new wind will be under \$0.20/kWh. On a long ridge like Mount Sumanik, the second wind phase will cost less because the powerline and road infrastructure will already have been built in the first phase.

For the Yukon, there are however, more effective and much more valuable ways to accommodate the intermittent nature of wind farms by diverting the excess wind energy to space heating.

In the Yukon, space heating makes up about 70% of the annual energy needs of a home. Presently the majority of space heating is met by imported oil and propane. The other 30% of the home energy needs are used for lighting, appliances and domestic hot water and those are usually provided for by electricity. Seasonally, the use of lighting, appliances and domestic hot water will vary only slightly over the course of the year and the average is relatively constant at about 1000 kWh per month. Space heating however will swing from virtually nil in the summertime to about 3,000 kWh per month. Wind energy can be effectively used meet that space heating demand in the winter.

The space heating requirement in the Yukon is roughly equal to the present electrical demand. The electrical customers have a space heating need that could double energy sales for Yukon Energy: that is, increase energy demand from about 400 GWh/year to 800 GWh/year. This new market is a potential economic gold mine for Yukon Energy and Yukoners alike as it will keep dollars within the territory instead of spending it on imported heating oil.

The Electrical Thermal Storage (ETS)

Wind can be more fully utilized by turning on heaters and storing the heat in a chamber that contains a material of high heat capacity. This method is called Electric Thermal Storage or ETS for short.

The basic principle of the ETS is that it recharges the bricks during a period when only wind or hydro is available. The ETS can be controlled by the utility to avoid recharging

when there is diesel on the margin. The ETS can also be used to shave the daytime peaks and fill the nighttime valleys in the daily load profile.

Two examples of this daytime peak shaving are in Nova Scotia (<http://www.nspower.ca/en/home/residential/homeheatingproducts/electricthermalstorage/default.aspx>) and Sudbury (http://www.sudburyhydro.com/programs_electric_thermal_storage_heating.htm). The most well known ETS technology that we are aware of is one made by Steffes (<http://www.steffes.com/off-peak-heating/ets.html>) which offers a standalone room unit, hydronic and forced air heaters. Another company, Dimplex (<http://blog.dimplex.com/energy/electric-thermal-storage-heating-101/>) also makes a room unit that comes in different sizes.

Both ETS brands are available locally in Whitehorse. These types of heaters are designed to store heat in an insulated compartment that contains high density bricks (iron oxide ceramic clay). The ETS unit comes in a range of storage capacities from 13 kWh to 240 kWh. A homeowner would typically size the unit to meet the home's heating demand for a day. A typical home will use about 100 kWh for spacing in an average winter day. But well insulated homes could be matched with a unit sized for 2 to 4 days of stored heat.

In YCS Exhibit C-5-8 report entitled "Meeting Residential Space Heating Demand With Wind Generated Electricity", Larry Hughes of Dalhousie University demonstrated that in PEI, a wind farm, 5.15 MW in this case, could meet half the electric heating load of about 500 homes with conventional electric baseboards. If every home had an ETS system however, over 95% of the heating load could be met by the wind farm. This makes ETS for spacing heating a very good match for wind energy.

The Yukon has a similar seasonal heating demand and wind supply as PEI, which makes the ETS a good match for wind energy in the territory.

The ETS technology can be controlled by the utility to match the availability of wind energy. This would introduce the smart grid to the Yukon.

One of the advantages of the ETS for Yukon Energy is that the investment for storage is borne partially by the ratepayer/customer. Yukon Energy's need for new DRUPS as was stated in their 20-year plan for wind development can be replaced by the ETS technology. And since the ETS technology is interruptible it would greatly stabilize the grid load for the utility.

There would have to be a financial incentive however, for customers to invest in the ETS technology. The electricity rate would need to be lower when only wind or hydro is available and higher when diesel is on the margin. The rate could be divided into three tiers: lowest when wind energy is online, a medium rate when stored hydro is being used and the highest rate when diesel is on the margin.

As mentioned earlier, the ETS users are a very stable customer base that Yukon Energy should focus on, since they will bring a very stable revenue for the company. It will also

keep dollars here that are currently leaving the territory to purchase imported heating oil. Having this larger customer base and hence larger wind-hydro-diesel system then allows for more stability and less undesirable impacts when new mines come and go.

Sustainable mining, sustainable living and a legacy of renewable energy infrastructure

The mining companies has expressed that they want to be a sustainable industry in the Yukon.

YCS is arguing that for mines to be sustainable they should at least use a majority of renewable energy to power their operations. Diesel should only be used to fill small gaps between wind and hydro.

If Yukon Energy is to service the mines, then the mining industry should step up and help Yukon Energy invest in the renewable energy legacy infrastructure that will help Yukoners reduce their dependency on fossil fuel.

Yukon Energy argues that mines have a typically short life span (5-10 years) compared to the load life (>20 years) required to pay off a hydro or a wind project. The loss in energy sales left behind by the mines can simply be met by adding new ETS customers to the grid.

Again, the fact that wind energy is more abundant in the winter while hydro excesses are in the summer works well for mine loads, which tend to be constant over the year. New mines that come online can take advantage of the existing excess hydro energy that is available in the summer. To complement the wintertime hydro shortfall the mines should help Yukon Energy invest in wind energy to meet that hydro shortage.

A wind energy legacy is what YCS would like to see the mining companies leave behind.

Appendix A

YCS comments on Yukon Energy Corporation's 20 Year Resource Plan

YCS feels it is inappropriate that the public utility's resource plan update was not required by the Justice Minister to have a specific evaluation by the Yukon Utilities Board with recommendations, like it was in 2006. This current draft resource plan represents an extreme departure from the public utility's former focus in its conclusion that LNG is the only option worthy of pursuit.

We ask that the YUB require YEC to conduct further public consultation about the 20 Year Resource Plan (after correcting the graphs) showing the utility's true intention of transitioning and entrenching us into more fossil fuel use rather than the development of renewable alternatives, and that the YUB review the plan in detail.

The draft resource plan as it stands should be entitled "the case for LNG" rather than a fair consideration of alternative energy sources to help meet demand, reduce emissions and diversify the Yukon's energy portfolio.

We do hope this proposed undertaken is pursued. But in case of its absence and as the 20 Year Resource Plan was included as part of YEC's GRA, YCS feels it appropriate that we share with the YUB our comments on the draft resource plan.

We sincerely hope that the YUB with its authority will question this plan's legitimacy, encourage the public utility to incorporate comments received into a revised plan, then to resubmit the resource plan to the YUB, perhaps alongside the forthcoming DSM Plan, for further Board and public scrutiny.

Please see YCS's comments on Yukon Energy Corporation's 20-Year Resource Plan below:

November 7, 2012

YCS comments on Yukon Energy's 20-Year Resource Plan

To Whom It May Concern at Yukon Energy Corporation,

Please accept this letter as the Yukon Conservation Society's (YCS) comments on Yukon Energy Corporation's (YEC) 20-Year Resource Plan (RP).

Our comments fall under the following themes:

- Timing of the release of the 20-Year Resource Plan
- Absence of Life Cycle Accounting
- The assumptions used in calculations for cost estimates of various supply options
- Unfavourable portrayal of wind by YEC in public
- Demand Side Management back on the radar
- "Obligation To Serve" and the promotion of LNG to the detriment of renewables

Timing of the release of the 20-Year Resource Plan

The title page of the Resource Plan document has the date of December 2011, but the document was not shared with the public until August of 2012. YCS does not understand the significant discrepancy between the completion of the document and its release. Further, this document has been submitted to the YUB without sufficient public consultation. The YUB is not an adequate or appropriate forum for this document to be discussed.

YEC claims it has been "planning in public" with its charrette and mini-charrette processes which were meant to inform the development of this plan, but the results of this document are not consistent with charrette outcomes. For example, the biomass mini-charrette resulted in a change in YEC's scope for a potential project quite significantly – from 25 MW to 1 or 2 MW. This is not reflected in the Resource Plan, which talks about a 15 MW Wood Biomass plant. Similarly, the outcome of the mini-charrette and subsequent feedstock analysis for a Waste-To-Energy plant deemed the project a non-starter, yet it is still contemplated in the Resource Plan.

Unfortunately, it seems that the trickle down from public planning with Yukon stakeholders did not arrive at the document's Manitoba-based authors.

Another unfortunate oversight was that this document was released before Yukon Energy Corporation held a mini-charrette on wind energy in the Yukon. YEC senses that the public desperately wants to have the discussion about wind, to learn why it is going nowhere in the Yukon, and what we all can do to ensure the public utility and Yukon government take wind seriously as the viable renewable option that it is.

Life Cycle Accounting

LNG is often touted as the “clean” choice in the fossil fuel realm. But this is only if the pollution coming out of the stack is accounted for. True, natural gas burns cleaner than diesel, but this does not tell the whole story, and the whole story is not one that YEC has chosen to tell. Studies are showing that when upstream impacts (greenhouse gas emissions and pollution during extraction and transportation) are taken into account, natural gas is no better for the environment and the climate than other finite fossil fuels such as diesel and even coal. This reality is made more disturbing by considering the devastating impact that the current natural gas extraction technique of hydraulic fracturing or fracking has on surface- and groundwater.

Externalizing costs of LNG may be convenient for the public utility when YEC so clearly wants this supply option to be perceived as the only suitable choice, but ignoring lifecycle analysis does a disservice to YEC and to the public.

Of course, not only should we be looking at upstream impacts and lifecycle accounting of LNG, but of all the supply options – including diesel.

Including lifecycle accounting analysis in the matrix of criteria for choosing the best options for the future is critical. It is a mistake to leave it out. It is imperative that YEC do its part to advance the conversation to help expand the public’s understanding of the full and true costs of our energy choices.

The assumptions used in calculations for cost estimates of various supply options

An important assumption factored into estimations for cost per kilowatt hour (kWh) of different short term supply options is that industrial load will drop off by 2020.

Because of this assumption that industrial demand will disappear and that no other demand for electricity will replace it (fuel switching for change out or new build to electric heat which is already happening, and for transportation in the form of electric cars, which could also provide a source of electrical storage in their batteries), wind is not on equal footing with other options in comparisons of supply options. In some of its calculations, YEC has shown wind to cost \$0.40/kWh, which would make it prohibitively more expensive than all the other options.

Also within the document, but not shared with the public in YEC's presentations, is the other cost estimation for wind at \$0.15/kWh. The difference in this calculation is that it is assumed full utilization of the wind resource – something that YCS feels is more accurate. This cost estimate falls below the cost estimate for LNG, which is very important.

YCS expects that any renewable option attached to a cost estimate that falls above the LNG cost threshold will not proceed to development. This does not bode well for any renewable supply option, let alone wind which to date has not been taken seriously by the public utility.

Wind, estimated to cost \$0.40/kWh in the plan summary because of questionable assumptions, is way off the scale to the right of the diesel line. This graph misrepresents wind because it is stating that the energy produced and the turbines themselves are useless and have no value once the projected economic bust comes in 2020. In reality, secondary sales of surplus electricity or the sale of the turbines themselves if the projected economic bust comes to fruition would help recover costs and/or ensure energy produced did indeed have value.

Unjustified unfavourable portrayal of wind by YEC to the public

YCS takes issue with and has serious concerns with the unjustifiably negative and inaccurate way in which YEC has chosen to portray the potential and cost of wind energy in the Yukon to the public, discussed briefly in the previous section.

We will first focus on the PowerPoint presentation from the public meetings in August.

The circle or bubble graph discussed earlier provides a simplistic visual to disregard wind. Wind is shown sky high and way off in right field compared with other options.

The next infographic offered in the public presentation in which wind is unfairly disregarded is titled: Near Term Resource Supply Options. This graph has supply options on the vertical axis, and the four criteria (reliability, affordability, flexibility, and environmental responsibility) by which the options are judged on the horizontal axis.

This easy visual aid uses three colours: red for low, yellow for medium and green for high when evaluating options against criteria.

The problem that YCS has with this graph is that it is entirely subjective. Along with the bubble graph, this would appear to be one of the main tools in the public utility's public relations campaign against wind.

One of the biggest problems with this misinfographic is under "affordability", where it clarifies the "potential lifecycle cost kWh if fully used." Wind is red for low or stop. But

in the RP Overview, we learn that if fully used, wind costs \$0.15/kWh, which is less than LNG, which got a blended yellow/green or medium/high affordability.

This is either a mistake, or intentional.

Wind was the only option to be graded with the red light/low for reliability – winter peak capacity. This is disingenuous. An earlier graph in the presentation shows hydro capacity versus load demand, which are opposite curves (Hydro availability high in summer, low in winter, electrical demand low in summer, high in winter). But a similar graph in the recently released January 2009 Wind Assessment Feasibility Study Final Report shows wind resources on Mt Sumanik with the same curve as the Yukon's electrical demand. The Yukon's wind resources match seasonal loads: wind resources are most favourable in winter when the demand is highest, and spring, when the hydro resources are lowest.

Wind is also graded low on flexibility, which does not take into consideration the fact that wind projects are scalable, and that instead of a 21MW project that requires costly DRUPS, we could start with a 10 MW project and add turbines as required.

While YCS feels somewhat comforted that at least the potential of a Tehcho wind project at Ferry Hill near Stewart Crossing is being looked at, we do not understand why the promising work on Sumanik, and all the recommendations for next steps, were disregarded to start from square one at a different location.

Demand Side Management (DSM) back on the radar

Thankfully Demand Side Management (DSM) factors more prominently in this RP than in its 2006 predecessor – likely due to the direction from the Yukon Utilities Board. However, the DSM Plan does not go far enough to address the potential savings that efficiency and conservation can bring to our system. The Yukon needs to look more seriously into load management. This means shifting demand to shave the peaks and fill the valleys, as well as move or enhance demand into summer when there is a surplus of electricity. While still important, current thinking on DSM is simply to pick the low hanging fruit that will reduce overall electrical consumption.

There are strategies that can be employed to manage loads – from time of use pricing, to appliance timers, to seasonal rates, to secondary sales. New technologies like Electrical Thermal Storage would be a perfect complement to a wind energy project in our cold climate, because ETS stores energy in the form of heat when the wind blows to use when the turbine blades were not turning.

We understand that the upcoming/current DSM Plan is a first step. YCS looks forward to helping build upon the work that has been done to broaden the scope of initiatives to ensure the Yukon is using its energy resources in the wisest way possible.

“Obligation To Serve” and the promotion of LNG to the detriment of renewables

YCS sees one of the most significant impediments to development of our renewable energy resources is the public utility’s interpretation of a section of the Public Utilities Act. YEC’s perceived “obligation to serve” has resulted in the LNG-Is-The-Only-Option conclusion that is repeated throughout this Resource Plan.

Yukon Energy Corporation has stated that no matter how small or large, it is obligated to supply electricity to any customer who connects to the grid without prejudice.

However, YCS sees this often mentioned “duty to serve” differently. The Act states that the Yukon Utilities Board will determine whether it makes economic sense and won’t negatively impact ratepayers for a large industrial customer to connect to the grid and for YEC to serve it.

It is the lack of lifecycle analysis, the unfair, inaccurate, biased and negative portrayal of wind, and the economic boom/bust assumption in the calculations (along with the obligation to serve position) that makes LNG look the most favourable.

YCS strongly feels that large industrial customers should invest in their own LNG infrastructure for their operations. This would ensure the heat from LNG plants could also be used to heat mine buildings, and the line loss from sending fossil fuel-generated electricity great distances via transmission lines would be eliminated.

As we have seen with a thorough energy analysis of the proposed Eagle or Victoria Gold operation, connecting large industrial customers to the grid will result in increased costs for ratepayers. It does not make sense for Yukon Energy Corporation to burn natural gas in Whitehorse – even if a use for the heat could be found – when mines could do it themselves more efficiently on site.

It would be the height of environmental folly if we let our public utility get into the business of substituting one dirty fossil fuel with another, especially if investment in the new fossil fuel will effectively prevent any renewable source from being developed.

Conclusion

The Yukon is a unique jurisdiction. We need to start viewing the fact that we are on an isolated grid as a benefit, not as a drawback. The Yukon has amazing wind and solar potential that have not been realized by the public utility. We still have a pristine environment and clean water free from destructive oil and gas extraction practices. Can we ensure our energy choices do not compromise this?

It displays a lack of imagination to default to burning finite fossil fuels to meet electrical demand when free sources of energy that do not harm the land, water and air abound. The Yukon Government needs to become a more active participant in ensuring that the Yukon

develop these vast reserves of renewable energy, not lock us into exploiting polluting and finite fossil fuels.

Thank you for the opportunity to comment.

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