Yukon Energy Corporation
Yukon Utilities Board Review in the Matter of an Electricity Purchase Agreement Between Yukon Energy Corporation and Tlingit Homeland Energy Limited Partnership

Yukon Utilities Board Information Requests Round 1 to Yukon Energy Corporation (YEC)

YUB-YEC-1-01

Reference: **May 18, 2021 Minister McPhee's letter - Referral of the Electricity Purchase Agreement with Tlingit Homeland Energy LP**

Issue: **Need, timing and proposed terms and conditions**

Quote: "3. The YUB shall report on, and make recommendations about, the necessity for the Agreement, its timing, and proposed terms and conditions, with particular regard to:

a. The public need for the Agreement under various reasonable electric load forecasts.

b. The effect of the proposed commitments on the rates of customers and the reliability of electricity service provided to customers.

c. The capability of existing and currently committed and expected generation and transmission facilities including thermal generation facilities to provide reliable electric power generation to meet the forecast load requirements in (a) and the effect of the Agreement on this capability.

d. The risks associated with the Agreement, including its potential impacts on YEC and rates for customers and on the reliability of electricity service provided to customers.

e. Evidence that all reasonable alternative options have been considered, and that proposed spending commitments have been selected on reasonable grounds.

f. Whether it is prudent to enter into the Agreement as proposed at this time."

Request:

(a) Please provide a summary of how YEC's application meets each item in the enumerated list from the Minister (and in terms of need, timing and with reference to the terms and conditions in the agreement).

(b) How do the terms of the agreement, and specifically the conditions precedent in the agreement, affect the Board's review of factors (a) to (f) above?

YUB-YEC-1-02

Reference: **Application, page 1, PDF page 4**

Issue: **Hydro energy from the Atlin hydro expansion project with THELP**

Quote: "It can provide the Yukon Integrated System ("YIS") at Jakes Corner with 8 MW of winter dependable capacity and 36 GWh/year of long-term average renewable hydro energy if operated throughout the year."

Request:
(a) How accurate is the assumption that the renewable hydro energy will be operated throughout the year?
(b) If the Atlin hydro expansion project is operated throughout the year, how likely is it that YEC facilities will spill water due to water license restrictions, which would mean that YEC would not generate electricity from that spilled water?

YUB-YEC-1-03
Reference: **Application, page 1, PDF page 4**
Issue: **Project funding**
Quote: "THELP is proceeding to secure approvals and permits for the Project, and YEC and THELP are collaborating on securing the necessary government funding."

Request:
(a) Has YEC or its parent YDC directly or indirectly contributed any funds to the project – e.g., the work to secure funding? Please explain.
(b) Will YEC or YDC be providing any funding for the project? Please explain.
(c) Please explain how each of the funding sources and amounts (expected to be secured or already secured) will impact both YEC and ratepayers.

YUB-YEC-1-04
Reference: **Application, page 2, PDF page 5**
Issue: **Project description**
Quote: "The Project is an 8.7 MW hydroelectric facility that expands, but is separate from, the Existing Plant, although it uses the same Surprise Lake storage (expanded with the new THELP Plant) and Pine Creek water flows."

Request:
Can both the Atlin hydro expansion project and the Existing Plan simultaneously operate at full capacity and for extended periods? Please explain with supporting details.

YUB-YEC-1-05
Reference: **Application, pages 2-3, PDF pages 5-6**
Issue: **Project description**
Quote: "A 92 km 69 kV new transmission line from a new substation at the new hydro facilities to a new interconnection substation at Jakes Corner, YK with interconnection to the YIS at the existing 34.5 kV ATCO Electric Yukon ["AEY'] facilities ["AEY System"] for transmission to YEC's S-150 substation in Whitehorse."

Request:
Please describe whether each of the facilities listed in the quote are regulated or unregulated, and if regulated, whether YUB or BCUC is the regulator.

YUB-YEC-1-06

Reference: **Application, page 3, PDF page 6**
Issue: **Project description**
Quote: "The Project will also include upgrades to the YIS to accommodate the Project's capacity and energy deliveries (primarily involving AEY System transmission upgrades)."

Request:

(a) Please describe these upgrades and who will be responsible for the upgrades (YEC or AEY).
(b) Where does YEC expect the upgrades to regulated facilities to be included in rates (YEC and/or AEY's rates)?

YUB-YEC-1-07

Reference: **Application, page 2, PDF page 5**
Issue: **Project options**
Quote: "Its significantly shorter project development timeline when compared to other greenfield hydro options (reflecting its expansion of TRTFN's existing Atlin hydro project and the feasibility work already completed for the expansion project)."

Request:

(a) Please describe and explain the other options referred to in the above quote. In your response, please identify what non-renewable options were explored.
(b) Why was the Altin hydro expansion project the preferred option in terms of both the reasons for the project and project cost?

YUB-YEC-1-08

Reference: **Application, page 2, PDF page 5**
Issue: **BC Hydro Supply Agreement**
Quote: "In 2009 the TRTFN, through an affiliate of THELP, developed a 2.1 MW hydroelectric power station at Atlin, BC, on Pine Creek with hydro storage at Surprise Lake (the "Existing Plant"). The Existing Plant has an existing electricity purchase agreement with BC Hydro to supply BC Hydro load at Atlin until 2033. THELP expects that a further EPA will be negotiated with BC Hydro for supply after 2033."

Request:

Please provide a copy of the agreement referenced above.

YUB-YEC-1-09

Reference: **Application, page 3, PDF page 6**
Issue: **YIS upgrades**
Quote: "The Project will also include upgrades to the YIS to accommodate the Project's capacity and energy deliveries (primarily involving AEY System transmission upgrades)."

Request:

(a) Please list all expected YIS upgrades and provide a cost estimate for each upgrade, including the amount of added capacity.
(b) Please describe where the interconnection metering point will be.
(c) Please describe how far down the Tagish Road the AEY line is. Is it a three-phase line? What voltage is that line?

YUB-YEC-1-10

Reference: **Application, page 3, PDF page 6, footnote 4**
Issue: **Moon Lake**
Quote: "In future the Interconnection Substation could potentially be connected directly to a new 69 kV YIS facility if new transmission through Carcross to a Moon Lake pumped storage hydro facility is developed as proposed in the Yukon Energy 10-Year Renewable Electricity Plan. See Figure 2-2."

Request:

Please describe the anticipated cost implications of YEC's relationship with AEY if the Moon Lake project proceeds.

YUB-YEC-1-11

Reference: **Application, page 5, PDF page 8**
Issue: **Thermal displacement**
Quote: "As reviewed in Section 3 below, the EPA focuses on energy delivery for the Winter Period (defined as January-May and September-December inclusive). Expected Winter Period deliveries to YEC per calendar year are 30.8 GWh LTA energy and 25.2 GWh firm energy during the lowest water year. Figure 2-3 below shows LTA Winter Project deliveries by month at Jakes Corner, and the resulting LTA YIS thermal displacement benefits of 19.6 GWh/year at forecast 2024 YIS load after considering other existing or expected renewable sources."

Request:

If 30.8 GWh is provided year-round and the thermal displacement is 19.6 GWh, what is the cost of the remaining 11.2 GWh?

YUB-YEC-1-12
Reference: Application, Figure 2-3, page 5, PDF page 8
Issue: Benefit of winter deliveries

Request:
For areas of the blue portions of Atlin deliveries that are above the red line in Figure 2-3, does that mean that YEC would take deliveries when there are no LTA benefits? Why or why not?

YUB-YEC-1-13
Reference: Application, page 6, PDF page 9
Issue: Government grant funding
Quote: "Yukon Energy's 10-Year Renewable Electricity Plan assumed government grant funding to support the development of renewable sources that would not otherwise be selected as the lowest cost resources. YEC and THELP are accordingly collaborating on securing government grant funding necessary for the Project to proceed.

Project capital costs have been estimated to date at approximately $206 million. Grant funding of approximately $150 million is being sought from the governments of the Yukon Territory, British Columbia and Canada to support the economics of the Project. Such funding would allow Yukon Energy to purchase energy and capacity from the Project at prices comparable with the lowest cost thermal alternatives, and deliver a reasonable return to THELP."

Request:
(a) What are the current "lowest cost thermal alternatives", and what is their cost per megawatt hour?
(b) What YEC backup resources will be available to maintain N-1 capacity if THELP's delivery of electricity under the EPA did not occur or were undelivered?
(c) What is the minimum amount of thermal generation capacity that YEC will require to maintain N-1 capacity after electricity deliveries under the EPA take effect? How long does YEC expect to have to maintain such thermal generation capacity and from what thermal generation sources? This projection should include YEC's load growth projections for the life of the EPA.

YUB-YEC-1-14
Reference: Application, Figure 2-4, page 6, PDF page 9
Issue: Low water sequence

Request:
(a) For the assumption for "Average for Low Water Sequence", which is the solid red line in Figure 2-4, explain how likely it is that Atlin can provide contracted electricity deliveries at full levels to YEC if there are low water or drought conditions.
(b) Would low water or drought conditions impact Atlin's operations?

YUB-YEC-1-15
Reference: Application, page 6, PDF page 9
Issue: Project capital costs

Preamble: Project capital costs have been estimated to date at approximately $206 million.

Request:
On a best estimate basis, provide the capital cost breakdown for this project between generation (production) costs and transmission costs.

YUB-YEC-1-16
Reference: Application, page 6, PDF page 9
Issue: Grant funding
Quote: "Grant funding of approximately $150 million is being sought from the governments of the Yukon Territory, British Columbia and Canada to support the economics of the Project."

Request:
(a) What parts of the project would B.C. government funding cover?
(b) What parts of the project would Yukon government funding apply to?
(c) What parts of the project would federal government funding apply to?
(d) Please describe each of the grants, the amounts of each of the grants, and the current status and completion dates of each of the grant applications.
(e) Please explain the funding source for the $56 million in costs for the project not covered by government grants.

YUB-YEC-1-17
Reference: Application, page 6, PDF page 9
Issue: Lowest cost thermal alternative
Quote: "Such funding would allow Yukon Energy to purchase energy and capacity from the Project at prices comparable with the lowest cost thermal alternatives, and deliver a reasonable return to THELP."

Request:
(a) Describe the lowest cost thermal alternatives.
(b) What is the cost of the lowest cost thermal alternative?
(c) After regular deliveries from the EPA begin, how many rented diesel generators will YEC need to ensure N-1 capacity is maintained going forward?
(d) Will the number of such generators increase as the YIS load increases, and if so, by how many?

YUB-YEC-1-18

Reference: **Application, page 7, PDF page 10**
Issue: **YIS system upgrades**
Quote: "THELP is responsible for all AEY and YEC system upgrade costs needed to connect the Project to the YIS. Final scoping for these upgrades (with planning level cost estimates) is to be included in the Buyer-AEY System Interconnection Study Report that is currently being concluded as part of the Interconnection Agreement between THELP, YEC and AEY."

Request:

(a) Does the referenced quote mean all connection costs up to and at Jakes Corner, including substation and metering costs?
(b) Does this include upgrades to the AEY transmission system? If so, please describe those upgrades.
(c) What are the estimates for each of these connection costs?

YUB-YEC-1-19

Reference: **Application, page 8, PDF page 11**
Issue: **Starting templates**
Quote: "The Parties used as a starting template for the negotiation an amalgam of the YEC Standing Offer Program (SOP) EPA and the BC Hydro Independent Power Producer (IPP) Large Project EPA, and certain other commercial principles and basic terms relevant to the Parties."

Request:

(a) Please provide copies of the YEC Standing Offer Program EPA and the BC Hydro Independent Power Producer (IPP) Large Project EPA.
(b) Does BC Hydro define a "large project EPA"? If so, please provide that definition.
(c) To the extent that YEC is able to answer, what were the commercial principles relevant to the parties?

YUB-YEC-1-20

Reference: **Application, page 8, PDF page 11**
Issue: **Interconnection Agreement**
Quote: "The Project will also include upgrades as required to connect the THELP's Plant to the YIS (defined in the EPA as "Buyer-AEY System" and "Buyer-AEY System Upgrades"). Final scoping for these upgrades (with planning level cost estimates) is to be included in the Buyer-AEY System Interconnection Study Report that is currently being concluded as part of the Interconnection Agreement between THELP, YEC and AEY."

Request:

(a) When is the Buyer-AEY System Interconnection Study Report due, and when will those costs be known?
(b) Is there a cost threshold for this part of the project at which the project will not be viable or otherwise not proceed?

(c) From the Yukon/BC border to Jakes Corner, how many potential electricity users will connect to the system?
(d) Are those users customers of THELP or YEC?
(e) What First Nation settlement lands and traditional territories would be affect b the Atlin-Jakes Corner infrastructure, and what is the extent of consultation/accommodation to date?

YUB-YEC-1-21
Reference: **Application, page 9, PDF page 12**
Issue: **Dependable Plant Capacity Tests**
Quote: "Dependable Plant Capacity Tests at THELP's COD - overall Phase One and Phase Two Dependable Plant Capacity delivered to YEC at the POI, as confirmed by these tests, cannot be less than 8.0 MW and not more than 8.5 MW."

Request:
Please explain the significance of the upper limit of 8.5 MW.

YUB-YEC-1-22
Reference: **Application, pages 9-10, PDF pages 12-13**
Issue: **Notice of first Peak Winter Period (PWP)**
Quote: "If THELP is unable to confirm to YEC on or before June 1, 2024 the availability of Dependable Plant Capacity for the first PWP, Section 4.3 of the EPA provides that YEC may proceed to rent diesel generating units for this first PWP and no Dependable Capacity Payment will be payable by YEC to THELP for the first PWP for Dependable Plant Capacity that was already provided by such rented diesels."

Request:
How will YEC determine the number of diesel generation units that are required to be rented in the situation referenced in the above quote?

YUB-YEC-1-23
Reference: **Application, page 10, PDF page 13**
Issue: **Operating rules**
Quote: "Operating Rules for Seller's Plant (Schedule D of EPA) - require THELP and YEC to coordinate and schedule the delivery of Delivered Energy and Dependable Plant Capacity, subject to provisions affecting operations after each August until the start of the following June that are focused on maximizing hydro storage and its use at YEC's direction for dependable capacity during the PWP while recognizing constraints on changes to winter flows in the 7.8 km power canal due to ice conditions and/or water availability."

Request:
(a) Please provide the details and principles YEC will use in determining its merit order for dispatching generation.
(b) Where will the Atlin hydro expansion project's electricity be placed in the merit order?

YUB-YEC-1-24
Reference: Application, page 11, PDF page 14
Issue: Commercial terms
Quote: "2. Payment for Winter Energy that displaces forecast thermal generation: YEC will only pay for winter energy based on its displacement of YEC's forecast thermal fuel generation costs at long-term average renewable sources for the YIS and the Project."

"3. Delivery of all Winter Energy available: while YEC will only pay for winter energy that displaces LTA forecast thermal generation, YEC will take delivery each winter season (Sep-May) of all available energy that the Project is able to generate."

"4. Thermal Benchmark Pricing: the 2024 benchmark prices paid under the EPA are $0.19/kWh for energy that displaces thermal generation (based on blended thermal generation LNG and diesel fuel costs) and $200/kW per year for the levelized cost of capacity (capital and non-fuel O&M) of permanent new greenfield thermal generation assets. Benchmark prices after 2024 are assumed to escalate at 50% of CPI for energy and 100% of CPI for dependable capacity."

"5. Payment for Capacity: rather than paying for actual dependable capacity provided by the Project, YEC will pay for Dependable Plant Capacity Committed over each Peak Winter Period, based on the outcome of a capacity test completed each December at the beginning of each winter period. A mechanism is included for YEC to recoup any shortfalls in actual dependable capacity delivered each winter period through deductions from the additional revenue opportunities/upside opportunities for THELP (see item 7 below)."

Request:
(a) In paragraph 2 of the above quote, explain in detail what is meant by "forecast thermal fuel generation costs at long-term average renewable sources" and how it applies in the context of the quote.
(b) How is the thermal displacement amount determined?
(c) What happens if thermal fuel generation costs are lower than LTA?
(d) What happens if thermal fuel generation costs are higher than LTA?
(e) In paragraph 3 of the above quote, what are the implications of this provision relative to the amount of thermal generation that YEC would otherwise require during the winter months?
(f) In paragraph 3 of the above quote, does the term "Delivery of all Winter Energy" create a situation where YEC will spill water at its own hydro facilities without generating electricity because it is taking energy based on the Atlin project?
(g) Is the result that any energy delivered in excess of LTA forecast thermal generation will effectively be delivered at no cost?
(h) In paragraph 4 of the quote above, does the blended LNG and diesel fuel costs for generation closely reflect the actual costs for usage of those generation sources?
(i) Please file any existing documents relating to the costing model for permanent new greenfield thermal generation assets, including any form of business case analysis, including comparison with rented diesel generators.

(j) Show detailed calculations of how the $0.19/kWh and $200/kW were derived. In the response, list all assumptions made in the calculations.
(k) Why are benchmark prices assumed to escalate instead of relying on previous year escalation rates?
(l) Is capacity considered a fixed cost? Please explain.
(m) If capacity is considered a fixed cost, why is it escalated by CPI?
(n) Explain why committed capacity is used and not actual capacity. Please explain why committed capacity is preferrable to actual capacity given, for example, that price and revenue would be more accurate using actual capacity.
(o) How does the use of committed capacity benefit both YEC and Yukon ratepayers?
(p) Does the mechanism in paragraph 5 result in any actual cash recovery from THELP (or deferral of YEC payments to THELP), and if so, what length of time would it take to recover any shortfalls?

YUB-YEC-1-25
Reference: **Application, page 12, PDF page 15**
Issue: **Buyer-AEY System Constraint**
Quote: "Buyer-AEY System Constraint - YEC will have no liability for a Buyer-AEY System Constraint, except for a Non-Permitted System Constraint as set out in Section 6.5 of the EPA, i.e., a continuous Buyer-AEY System Constraint which exceeds 30 minutes in duration and which is not caused by (a) Buyer-AEY Planned Outage, or (b) THELP, THELP's Plant, or anything on THELP's side of the POI. If a Non-Permitted System Constraint occurs (and no exemption specified in Section 6.5 applies), YEC will pay THELP (for each such impacted month) for the Monthly Constraint Energy calculated for the relevant month under Schedule F of the EPA."

Request:
(a) Please provide further explanation of when YEC will not be responsible for payment in the Buyer-AEY System Constraint in Article 6. In your response, provide a numerical example of how the Monthly Constraint Energy will be calculated.
(b) In what circumstances will YEC pay for unplanned outages in THELP facilities through the Monthly Constraint Energy in Schedule F?
(c) Would YEC be required to pay for energy not received under the Buyer-AEY System Constraint?
(d) Would THELP have any financial liability to YEC for failing to deliver contracted energy due to reasons other than low water conditions? If not, what consequential impacts would there be for Yukon ratepayers?

YUB-YEC-1-26

Reference: **Application, page 13, PDF page 16**
Issue: **Winter delivered energy**
Quote: "Also, provisions for added payments related to winter delivered energy (subject to any reductions under Section 8.3 of the EPA) for the following possibilities where YEC and THELP will share added thermal cost saving benefits:

- Additional Payments starting in 2035 if there is Added Load on the YIS, i.e., load in excess of that assumed [with no industrial load] to determine the 2035 energy price.
- Carbon Charge Saving Payment if YUB approves a carbon charge in future to be included in customer rates."

Request:
Please provide further details on what carbon charge YEC is contemplating and why a term in this agreement was required.

YUB-YEC-1-27

Reference: **Application, page 13, PDF page 16**
Issue: **Dependable Capacity Payment**
Quote: "Dependable Capacity Payment (DCP): the DCP is the payment by YEC to THELP, based only on Dependable Plant Capacity Committed (DPCC) as provided for in annual test in December, and a Dependable Capacity Price of $200/KW per year16 (2024$) as escalated at CPI after 2024."

Request:
Why is inflation being applied? How do fixed or sunk costs factor into the application of CPI after 2024?

YUB-YEC-1-28

Reference: **Application, page 13, PDF page 16**
Issue: **Dependable Capacity Excess Payment**
Quote: "Dependable Capacity Excess Payment (DCEP) Account as per Section 8.3 of EPA"

Request:
(a) Please provide further explanation of this account and how this account will operate.
(b) Will regulatory approval from the Board be required for recovery of costs or payment of refunds for payments under the DCEP Account? If not, how will YEC customers be protected from adjustments of payments that are required under Section 8.3 of the EPA?

YUB-YEC-1-29

Reference: **Application, page 15, PDF page 18**
Issue: **YIS system upgrades**
Quote: "… the only utility assets being developed by YEC/AEY pursuant to the EPA are YIS system upgrades that are to be fully funded by the Project at no cost risk to the utilities."

Request:
To YEC's knowledge, do AEY system upgrades include a change from the existing 38 kV line to a 69 kV line? Please provide evidentiary support as part of the response.

YUB-YEC-1-30

Reference: **Application, page 15, PDF page 18**
Issue: **Thermal displacement**
Quote: "The capability of the Project during the initial 40-year EPA operating term to displace thermal generation capacity and energy otherwise expected to be required on the YIS to supply forecast electric load."

Request:
(a) Why was a term of 40 years chosen? In your response, please provide what YEC considers is a standard term (in years) of an EPA based on past YEC projects or other information.
(b) Will this project displace any existing hydro facilities on the YIS, for any periods throughout the year?

YUB-YEC-1-31

Reference: **Application, page 16, PDF page 19**
Quote: "The analysis below references certain sources that were reviewed by the Board in YEC's recent Part 3 application regarding the Battery Energy Storage System (BESS project) and YEC's 2021 General Rate Application (2021 GRA). These sources include:

…

- Goals outlined in Yukon government's draft 'Our Clean Future: A Yukon strategy for climate change, energy and a green economy'
- Relevant Order-in-Council (OIC) directions to the YUB affecting costs to be included in YEC's rates as approved by the Board."

Request:
(a) Please explain the applicability of OIC 2021/16 to this project.
(b) Provide a copy of the draft or final report "Our Clean Future: A Yukon strategy for climate change, energy and a green economy" that is referred to in the above quote.
(c) Page 21 of the Application, PDF page 24, refers to the *Clean Energy Act*. How should the Board assess the relevance of this act in making its recommendations to the Minister when the act has not been enacted, i.e., consultations recently closed in January 2022?

YUB-YEC-1-32

Reference: Application, footnotes 22 and 24, page 18, PDF page 21Issue: Hyperlinks

Preamble: The Board has previously determined that hyperlinked documents are unacceptable as, over time, the links may be broken.

Request:

Please provide the hyperlinked documents referred to in footnotes 22 and 24 in PDF form.

YUB-YEC-1-33

Reference: Application, Table 4-1, page 20, PDF page 23Issue: Non-industrial peak and dependable capacity

Request:

(a) Under the category "Non-industrial Peak", please explain what "EV Peak" is.

(b) Under the category "N-1 Event", please explain the inclusion of "Loss of AEY Haines Junction diesel" and "Haines Junction peak".

YUB-YEC-1-34

Reference: Application, footnote 34, page 22, PDF page 25

Issue: Historical records

Quote: "See Section 2.1.3 of this Submission. The LTA energy generation estimate for the Project deliveries to YEC was prepared by SNC Lavalin, retained by THELP, based on available historical water records (1963-1993; 2015-2019) as reviewed in Appendix A, Table A1. The Project LTA energy generation in Appendix A, Tables A1 and A3-1 for winter deliveries to YEC at Jakes Corner reflects the average Atlin Project hydro generation during the Winter Period (Jan. 1 to May 31, Sept. 1 to Dec. 31) for all water records, while the low water year winter generation deliveries reflect the lowest hydro generation in water year 1978. The transmission losses between the Atlin generation location and delivery point at Jakes Corner is estimated to be at around 2.7%. Additional losses are added that reflect losses in YIS system which is assumed at 6.2% based on losses approved for ATCO Electric Yukon in its most recent GRA (assumes AEY System Upgrades will result in continuation of past average losses despite the material increases in energy being transmitted on this system)."

Request:

(a) Why are historical water records from 1994-2014 not included in the LTA energy generation estimate?

(b) How accurate is the assumption that, with higher load, the assumed AEY System Upgrades will result in the continuation of past average losses? Please explain the basis for the assumption.

YUB-YEC-1-35

Reference: **Application, page 24, PDF page 27**
Issue: **Unknown reference**
Quote: "The BESS and the Project each can reduce the need for rented diesels – however, the Moon Lake pumped storage project, when developed in combination with BESS and the Project (as well as other developments assumed in Table 3-1), is the only identified resource option aside from default new thermal generation that has the capability to remove the forecast N-1 dependable capacity shortfall and reliance on rented diesels."

Request:
Table 3-1 is entitled "Summary EPA Energy and Capacity Pricing". What developments is YEC referring to in Table 3-1, or what table should YEC be referring to related to the above quote?

YUB-YEC-1-36

Reference: **Application, page 24, PDF page 27**
Issue: **Rented diesels**
Quote: "The only other alternative identified to date for meeting the capacity shortfall without rented diesels would be to develop additional permanent thermal (diesel) capability beyond the planned replacements of retired units. As reviewed in the BESS proceeding, the development of new permanent diesel plants is not supported by stakeholders and is also not in line with goals outlined in Yukon government's draft 'Our Clean Future: A Yukon strategy for climate change, energy and a green economy.' As reviewed in Section 4.2 below, EPA impacts on customer rates are designed to mirror or improve upon the impacts to be expected with a permanent thermal generation option."

Request:
(a) Explain the steps YEC took to review and the analysis undertaken regarding the diesel rental option.
(b) Describe the steps taken and analysis performed regarding the purchase of a larger diesel option (for example, 20 MW) and later sale of that unit when the greenfield projects are completed (Atlin, BESS, Moon Lake). What is the impact of these options on GHG emissions?
(c) Disclose all documents within YEC's control, both public and internal, relating to the comparative benefits and disadvantages of thermal generation options, including rental diesel generators, purchasing portable diesel generators, and constructing a large (e.g. 20 MW) permanent diesel generator. Include all comparative financial benefits and disadvantages of each option.
(d) Referring to the final paragraph of 4.2, how many "stakeholders" were opposed to the permanent generator option and what specific interests did these stakeholders represent? Were these stakeholders full informed of the other options – e.g. continuing use of rental diesel generators? Were the stakeholders informed about the comparative electrical rate impacts associated with the available options?

YUB-YEC-1-37

Reference: **Application, page 25, PDF page 28**
Issue: **EPA constraints**
Quote: "The effect on customer rates of energy and capacity purchases under the EPA is constrained by the agreed price and payment terms (see Section 2.4.3 of this Submission) and the actual dependable capacity and delivered energy provided by THELP."

Request:
Please explain the above quote and why the statement is accurate in terms of the effect on customer rates.

YUB-YEC-1-38

Reference: **Application, page 25, PDF page 28**
Issue: **Costs for dependable capacity**
Quote: "EPA impacts on YEC costs for dependable capacity and delivered energy are designed to mirror or improve upon the cost impacts on YEC and customer rates forecast for a permanent thermal generation option"

Request:
(a) Why is a permanent thermal generation option the standard by which these costs (Dependable Capacity Payment and Winter Delivered Energy) are measured?
(b) Should not the costs for dependable capacity be measured under the EPA on whether those costs are less than a thermal generation option? If no, why not?

YUB-YEC-1-39

Reference: **Application, page 25, PDF page 28**
Issue: **Dependable Capacity Payment**
Quote: "Dependable Capacity Payment (DCP): the DCP payment to THELP by YEC in the EPA is based only on the Dependable Plant Capacity Committed (DPCC) as confirmed by an annual December test as provided for in Section 5.5 of the EPA, and a Dependable Capacity Price of $200/kW per year (2024$) as escalated at CPI after 2024.

This price and cost to YEC reflects the levelized capacity and non-fuel O&M costs to YEC as estimated for equivalent permanent new diesel generation capacity."

Request:
(a) Explain why a largely fixed cost needed to be escalated by CPI?
(b) Why is $200/kW the standard and why is $175/kW not the standard for the Takhini greenfield plant?

YUB-YEC-1-40

Reference: **Application, page 25, PDF page 28**
Issue: **Unknown reference**
Quote: "The effect on customer rates of energy and capacity purchases under the EPA is constrained by the agreed price and payment terms (see Section 2.4.3 of this Submission) and the actual dependable capacity and delivered energy provided by THELP."

Request:
The application outline does not show a "Section 2.4.3". Please provide the correct reference and explain the meaning of the above paragraph.

YUB-YEC-1-41

Reference: **Application, page 26, PDF page 29**
Issue: **Summer delivered energy**
Quote: "Summer Delivered Energy (June-August) - summer energy deliveries, if requested by YEC, will be paid based on a Summer Delivered Energy Payment as provided in the EPA. This payment is equal to Summer Delivered Energy times 50% of the then current YUB approved blended fuel thermal price for YEC generation on the YIS."

Request:
Is the price based on the last Board-approved GRA blended fuel thermal price, or is it based on the last approved GRA price plus any subsequent Rider F changes? Please explain.

YUB-YEC-1-42

Reference: **Application, page 26, PDF page 29**
Issue: **Accounting treatment of EPA**
Quote: "There is some uncertainty with respect to what, if any impact the EPA may have on YECs balance sheet (i.e., rate base). Based on preliminary assessments of the Agreement, YEC has concluded that this transaction does not contain a capital lease and therefore there is no balance sheet or rate base impact. This conclusion, however, is not final. The ultimate impact can only be known when the Project is complete and YECs auditors (the Auditor General of Canada) have reviewed the transaction."

Request:
(a) Provide the basis of the preliminary assessments of the agreement that led to YEC's conclusion.
(b) If it is determined that the agreement operates as a capital lease, what are the impacts to the agreement and to customer rates?
(c) Please explain why YEC has not sought an external opinion on the accounting treatment of the EPA.

YUB-YEC-1-43

Reference: **Application, page 27, PDF page 30**
Issue: **YEC costs**
Quote: "The EPA also provides for any YEC costs for studies and other works to be fully funded by the Project (i.e., by THELP and not by the utilities) with advance payments as required – the only costs not funded by THELP relate to YEC's EPA negotiation costs and costs related to this Submission to the YUB."

Request:

(a) Provide examples of what types of studies may be required and any estimates of costs to customers for further studies.
(b) Provide an itemized breakdown of YEC's costs associated with the EPA planning, analysis, consultations, etc.

YUB-YEC-1-44

Reference: **Application, page 28, PDF page 31**
Issue: **EPA prices and energy deliveries**
Quote: "The EPA prices are sensitive to firm energy versus non-firm energy deliveries over the year – a factor which will tend to reduce cost impacts for YEC from variances in actual versus LTA costs related to EPA energy deliveries."

Request:

(a) Please provide further explanation on EPA prices and sensitivity because of deliveries.
(b) How would the factor work?

YUB-YEC-1-45

Reference: **Application, page 28, PDF page 31**
Issue: ***Clean Energy Act***
Quote: "Shortages in LTA Project energy deliveries relative to the LTA forecasts in this Submission could prevent YEC from meeting the 93% Renewable Portfolio Standard in the expected new Clean Energy Act. The YEC financial/ratepayer impact of such a shortfall is unknown at this time, e.g., it could potentially result in fines."

Request:

(a) Please explain why YEC would expect potential fines for violations of the *Clean Energy Act.*
(b) Would any potential fines be considered a shareholder expense rather than a ratepayer expense? Would YEC attempt to have such fine payments added to its rate base?

YUB-YEC-1-46
Reference: **Application, page 29, PDF page 32**
Issue: **No industrial load**
Quote: "However, over most of the EPA Term (i.e., from 2035 through to July 31, 2064) the EPA prices assume no industrial load – thereby minimizing risks to YEC and to customer rates."

Request:
In the scenario of no industrial load post-2034, would EPA purchases displace YEC hydro generation for the YIS system? Please explain why or why not.

YUB-YEC-1-47
Reference: **Application, page 29, PDF page 32**
Issue: **Costs arising from the Implementation Agreement**
Quote: "YEC will seek to recover from AEY, through the Implementation Agreement, any such costs due to a Non-Permitted System Constraint on the AEY System."

Request:
Explain the Implementation Agreement and how cost recovery under the agreement would operate.

YUB-YEC-1-48
Reference: **Application, Appendix A, Figure A1-1, page A-5, PDF page 40**
Issue: **Water Storage Savings**

Request:
Figure A1-1 shows Water Storage Savings of 2.8 GWh/yr. Explain what this value relates to and how that amount was determined.

YUB-YEC-1-49
Reference: **Application, Appendix B, page B-5, PDF page 49**
Issue: **Conditions Precedent**
Quote: TRTFN Approval: Section 2.1(d)(vi) of the EPA Conditions Precedent specifies that, on or before May 31, 2022, Seller will have obtained approval of the EPA by the TRTFN by way of Clan Directive or a Joint Clan Meeting Mandate.

Request:
(a) Prior to the negotiation of the EPA, did YEC engage in any consultations with TRTFN or other persons/parties who would be impacted by TRTFN approval as a condition precedent?
(b) Please describe the engagements involving TRTFN.
(c) Over what time period did this stakeholder engagement occur?
(d) Please explain the difference in TRTFN approval between Clan Directive and a Joint Clan Meeting Mandate.
(e) Who would have to vote for TRTFN approval? What happens if TRTFN approval is denied or does not occur by May 31, 2022?

(f) What stakeholder engagement occurred for transmission line construction between the Yukon/BC border and Jakes Corner?
(g) Which parties were involved in the consultation process?
(h) What project approvals are required from First Nations for any project construction in Yukon in general, and are there any other approvals required that are specific to this project?
(i) If there has been First Nation consultation, has any accommodation of First Nation interests been required or made, and if so, what costs have been or will be incurred by YEC in that regard?

YUB-YEC-1-50

Reference: **Application, Appendix B, footnote 14, page B-10, PDF page 54**
Issue: **Thermal generation displacements**
Quote: "Thermal generation reductions vary depending on Yukon Integrated System (YIS) water conditions. The LTA estimates are derived based on simulation assessments for 38 different YIS water years, taking into account direct thermal displacements by Atlin energy and also indirect thermal displacements by Atlin energy through facilitating enhanced hydro storage on the YIS that enables increased winter hydro generation in some of the water years. Estimates are derived from YECSIM model LTA assessments without and with Atlin energy deliveries, based on forecast YIS firm generation load requirements in 2024 and 2035 and planned YIS capability without the Project (including expected water use licence conditions, YEC hydro plant uprates and other expected IPP generation purchases by YEC). See Appendix A, Table A3-1 for 2024 and 2035 LTA thermal estimates (and related assumptions) with and without the Project."

Request:

(a) Please explain the term "indirect thermal displacements".
(b) Does the quote above mean that YEC will use energy from the EPA and withhold YEC hydro generation?

YUB-YEC-1-51

Reference: **Application, Appendix B, footnote 15, page B-10, PDF page 54**
Issue: **Firm Winter Energy Price**
Quote: "Section 8.2 of the EPA provides for monthly payment of the Firm Winter Energy Price (for estimated low flow water year winter delivery levels) and the Non-Firm Winter Energy Price (balance of winter deliveries) for Delivered Energy and Monthly Constraint Energy during the Winter Period."

Request:

(a) Please provide the basis for the statement in the above-quoted footnote.
(b) Please explain the difference between "firm winter energy" and "non-firm winter energy".
(c) Is all pricing based on assumed low-flow water years? Please explain why or why not.

YUB-YEC-1-52

Reference: **Application, Appendix B, page B-12, PDF page 56**
Issue: **Delivered Energy**
Quote: "First 25.2 GWh/year of Delivered Energy and Monthly Constraint Energy – Firm Winter Energy Price of $0.132/kWh for 2024, increased by 50% of CPI for each Year after 2024 until completion of 2034."

Request:
Please explain the difference between "Delivered Energy" and "Monthly Constraint Energy".

YUB-YEC-1-53

Reference: **Application, Appendix B, page B-12, PDF page 56**
Issue: **Estimated thermal displacements**
Quote: "If Carbon Charge included in YUB approved YEC rates, pay 50% of carbon tax per kWh times estimated thermal displacement during these winters (estimated at 63.5% of all winter deliveries in these years)."

Request:
Please explain how the 63.5% estimate was determined.

YUB-YEC-1-54

Reference: **OIC 2019/25, page 2, PDF page 2, Section 1 definitions**
Issue: **Price for electricity under electricity purchase agreement**
Quote: "'Independent power production facility' means a facility in Yukon…"
Preamble: The OIC does not refer to "capacity pricing".

Request:
Is the pricing under OIC 2019/25 only applicable to an independent power production facility?

YUB-YEC-1-55
Reference: Application, page 11, PDF page 14
Issue: Carbon charges
Quote: "If in the future a carbon charge is approved by YUB for recovery through customer rates, THELP can get paid up to 50% of YEC's added cost saving from thermal displacement."
Request:
(a) Please confirm if the CPI includes any carbon taxes levied on the ratepayer.
(b) Please confirm if any additional charge due to a carbon tax would in effect be double dipping.

YUB-YEC-1-56
Reference: Application, Appendix B, page B-10, PDF page 54
Quote: 2024 and 2035 Winter Energy Prices: the winter energy price has been estimated for 2024 based on expected loads with mines connected, and escalated at 50% of CPI each subsequent year until 2035.

Request:
Please explain how the Consumer Price index (CPI) is derived.

YUB-YEC-1-57
Reference: YEC 2016 Resource Plan Part 2, page 5-31, PDF page 3
Issue: Alternatives to the project
Quote:

1 Table 5-27. Small Hydro Resource Option Technical and Financial Attributes

Annual Energy GWh/yr	Firm Energy GWh/yr	Installed Capacity MW	Dependable Capacity MW	Levelized Cost of Energy $/kWh	Levelized Cost of Capacity $/kW·yr	Project Life Years	Lead Time Years	Dispatch-able Y/N
Drury Lake								
31.7	31.7	8.1	8.1	0.19	700	65	6	Y
Tutshi Windy Arm								
56.6	56.3	7.2	7.2	0.14	1100	65	6	Y
Wolf River								
95.6	86.9	20	2.8	0.14	700	65	6	Y
Finlayson River								
138.9	138.9	17.6	17.6	0.12	1000	65	6	Y
Atlin/Pine Creek								
36.1	22.3	8	5.5	0.13	806	30	6	Y
Anvil Creek								
41.3	31	9.8	2.5	0.17	700	65	6	Y

Request:

(a) Please explore the financial ramifications for the Yukon ratepayers for the projects Drury Lake, Atlin/Pine Creek and Anvil Creek.
(b) Would the energy produced by a Yukon Consortium for a project located in Yukon fall under OIC 2019/25?
(c) In financial terms, what is the difference between this EPA and projects that would fall within OIC 2019/25?

YUB-YEC-1-58

Reference: **Application, page 2, PDF page 5**
Issue: **BC Hydro Supply Agreement**
Quote: "In 2009 the TRTFN, through an affiliate of THELP, developed a 2.1 MW hydroelectric power station at Atlin, BC, on Pine Creek with hydro storage at Surprise Lake (the "Existing Plant"). The Existing Plant has an existing electricity purchase agreement with BC Hydro to supply BC Hydro load at Atlin until 2033. THELP expects that a further EPA will be negotiated with BC Hydro for supply after 2033."

Request:

Please provide a copy of the agreement referenced above.