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 (YUB) Information Requests Round 2 to Yukon Energy Corporation (YEC)

YEC-YUB-001

Reference: **Updated application, black-lined version, page 1, PDF page 5**
Issue: **Dependable winter capacity**
Quote: The Project expands TRTFN's existing 2.1 MW hydro facility that has operated since 2009 to displace BC Hydro diesel generation otherwise needed to supply the Atlin community. It can provide the Yukon Integrated System ("YIS") at Jakes Corner with 8.75 MW of winter dependable capacity and 42 GWh/year of long-term average renewable hydro energy if operated throughout the year. The Project will be dedicated to supplying the YIS during the term of the Amended EPA.

Request:

(a) Please explain what changes occurred to increase the winter dependable capacity from 8.0 to 8.75 MW.

(b) YEC notes that "42 GWh of long-term average renewable capacity is available if operated throughout the year." Please confirm that YEC's intention to obtain summer energy is on a limited basis only, e.g., to meet peak demand.

YEC-YUB-002

Reference: **Updated application, black-lined version, page 1, PDF page 5**
Issue: **Early contractor involvement**
Quote: On April 8, 2022, Yukon Energy sent a letter to the Board noting that "as a result of recent changes to the design of the Atlin Project arising from an early contractor involvement process initiated by THELP, the EPA signed on January 14, 2022 needs to be amended. Although the amended EPA will not change the basic impacts on YEC and ratepayers beyond improving the expected ratepayer benefits, the Board and intervenors will need time to review the changes to the project and the amended EPA."

Request:

(a) Why was the EPA agreed to and signed before THELP confirmed the design?

(b) Will the contractor from the early involvement process be the same contractor going forward?

YEC-YUB-003
Reference: **Updated application, black-lined version, page 4, PDF page 8**
Issue: **Transmission line to YEC's S-150 substation**
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. [footnote removed]

Request:
(a) Please provide the outage history for the transmission line from substation S-150 to Teslin.

(b) What consideration did YEC give to transmission line outages in respect to increased power flows from Atlin?

YEC-YUB-004
Reference: **Updated application, black-lined version, page 6, PDF page 10**
Issue: **Project capabilities**
Quote: Expected LTA energy deliveries during each PWP, based on the Project's Surprise Lake storage and its 51 modeled water years of record, will enable a full 8.75 MW of capacity to be delivered to YEC at Jakes Corner for over 85% of the 75 or 76 days in the PWP, which is more than enough days to cover the 20 or less days of the PWP period when minus 30ºC or lower temperature has been recorded at Whitehorse.

Request:
(a) The availability percentage has dropped from 94% in the original EPA to 85% in the amended EPA. Please discuss the significance of the change and the drivers for the change.

Footnote 7 at the end of the paragraph includes two changes, one where "and battery" is added after "Existing Plant", and the second changes the Atlin community load from 6.93 GW.h/yr to 7.11 GW.h/yr. Explain why the addition of "and battery" was required and how the addition is relevant to the amended EPA. Further, explain why the Atlin community load was increased in the amended application.

YEC-YUB-005
Reference: **Updated application, black-lined version, page 7, PDF page 11**
Issue: **Firm energy**

Preamble: The amended EPA reduces the firm energy during the lowest water year from 25.2 GWh to 23.5 GWh.

Request:
(a) Please discuss the rationale and significance of the above noted reduction.
(b) Please provide a definition for "firm energy".

YEC-YUB-006
Reference: **Updated application, black-lined version, page 17, PDF page 21**
Issue: **Firm energy**
Quote: Winter Delivered Energy – the basis for 2024-2034 and 2035 to end of Term Delivered Energy prices paid by YEC to THELP.

Request:
(a) Please explain why the terms "firm" and "non-firm" were removed from the original application.
(b) Firm and non-firm winter rates have been replaced with one winter energy rate. How will the elimination of the lower winter rate affect ratepayers?

YEC-YUB-007
Reference: **Updated application, black-lined version, page 9, PDF page 13**
Issue: **Low water years**
Quote: Forecast LTA thermal displacement benefits on the YIS resulting from the Project are based on the average of forecast thermal displacement under varying YIS water conditions over 38 water years. Figure 2.2-4 highlights the wide variance in forecast thermal displacement using 2024 forecasts over the 38 water years - ranging from 1.6 GWh/yr average for the 2013-2018 high water sequence to 41.1 GWh/yr average for the 1994-1999 low water sequence.

Request:
(a) When YEC was experiencing low water years 1994-1999, were the same low water conditions occurring at Surprise Lake/Atlin? Please explain.
(b) Please provide the evidentiary support for part (a) of the response, including any water records.
(c) Why is Figure 2.2-4 not included in the clean version of the application?

YEC-YUB-008
Reference: **Updated application, black-lined version, page 11, PDF page 15**
Issue: **Grant funding**
Quote: Grant funding of approximately $150 million has been committed from the governments of the Yukon Territory 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.

Preamble: British Columbia has been removed as a funding source.

Request:
(a) Why has British Columbia been removed in the application as a funding source?
(b) Please provide the expected amount of funding from each of the governments of Canada and of the Yukon Territory.

(c) How will the originally expected funding from BC be covered? Will Canada's or Yukon's portions increase, or will THELP provide funding through another source (e.g., financial institution)?

YEC-YUB-009

Reference: **Updated application, black-lined version, page 12, PDF page 16**
Issue: **Delivery of dependable capacity**
Quote: The additional terms related to the delivery of dependable capacity went beyond the IPP template document.

Request:

(a) Is Atlin considered an isolated system?

(b) Does the Standing Offer Program contain a dependable capacity element? If the response is yes, please provide details.

(c) Does the BC Hydro IPP Large Project EPA contain a capacity element?

(d) What components of the YEC (Standard Offer Program) EPA and BC Hydro IPP Large Project EPA were used to develop the Atlin EPA? In your response, please explain any similarities and differences between each of the two EPAs and the amended Atlin EPA.

(e) Why is a capacity element required for this agreement? Based on the agreed energy deliveries and the time period where those deliveries are to occur, is there already an implied capacity in the pricing? Please explain.

(f) Are the energy and capacity charges payable under the revised EPA agreement equal to the costs of a new thermal plant? If not, please explain from a rates perspective why the EPA is the preferred option.

(g) Can the EPA go forward without a capacity component? Please explain.

(h) What evidence can YEC provide that a capacity payment component is required for the EPA to go forward? Please provide that evidence and explain.

YEC-YUB-010

Reference: **Updated application, black-lined version, page 13, PDF page 17 and footnote 11**
Issue: **Conditions precedent**
Quote: The Amended EPA has no legal force until the various Conditions Precedent provisions in Section 2.1(d) are completed to the mutual satisfaction of YEC and THELP, with the last deadline for such condition completion in the Original EPA being prior to approximately mid-August 2022.

Preamble: The above quote notes a mid-August 2022 date for completion. Footnote 11 on the same page states in part: "All other Condition Precedents are to be completed by no later than June 14, 2022."

Request:

Please provide the revised date for last condition completion changed with the amended EPA and clarify whether there are multiple condition dates that apply to Section 2.1(d).

YEC-YUB-011

Reference: **Updated application, black-lined version, page 15, PDF page 19**
Issue: **Delivery of all winter energy available**
Quote: … while YEC will only pay for winter energy that is expected to displace LTA forecast thermal generation, YEC will take delivery each winter season (Sep-May) of all available energy that the Project is able to generate.

Request:

(a) To clarify what is meant by "expected to displace LTA forecast thermal generation", if 8.75 MWs are available to be delivered at Jakes Corner in a given hour but for that hour the LTA expected thermal displacement is only 1 MWh, will YEC only pay for 1 MWh of energy (not including capacity charges)? Please explain.

(b) If the assumption in part (a) is correct, is it probable that YEC may have to spill water on the YIS (assuming LTA conditions exist for that hour) due to the deliveries at Jakes Corner? Please explain.

(c) If the assumption to part (b) is correct, is there an opportunity cost to YEC due to the spilled water? Please explain.

YEC-YUB-012

Reference: **Updated application, black-lined version, page 15, PDF page 19**
Issue: **Payment for capacity**
Quote: … rather than paying for <u>actual</u> dependable capacity provided by the Project, YEC will pay for Dependable Plant Capacity <u>Committed</u> over each Peak Winter Period, based on the outcome of a capacity test completed each December at the beginning of each winter period.

Request:

(a) Why wasn't actual dependable capacity used? Would it not simplify the agreement? Please explain.

(b) By using dependable forecast capacity, is YEC and therefore ratepayers assuming risk or losing the time-value of money? Please explain.

YEC-YUB-013

Reference: **Updated application, black-lined version, page 17, PDF page 21, and Section 7.3, Enhancement of Existing Plant Using Seller's Plant, page A1-20, PDF page 108**
Issue: **New arrangements affecting enhancement of the existing plant**

Preamble: The following was deleted on page 17 (PDF page 21) in the amended EPA: "new arrangements affecting enhancement of the Existing Plant using the THELP's Plant under certain conditions that would provide enhanced capability to supply YEC as well as for Atlin Community Customer loads."

The new paragraph reads: "… provisions for the enhancement of the Existing Plant using the Seller's Plant, including current plans to tap the Penstock to supply the Existing Plant and provisions for YEC to review and consider for approval prior to 2034 any changes proposed by THELP to the configuration of

the Existing Plant when the Existing EPA with B.C. Hydro regarding the Existing Plant terminates."

Section 7.3 of the amended EPA includes the following:

"If Seller uses the Penstock also to provide water to the Existing Plant, Seller will ensure that operation of the Penstock will not have a material adverse effect on Seller's ability to deliver and Buyer's ability to receive during each Peak Winter Period.
…
Buyer will review and approve such changes, acting reasonably, provided that such changes comply with all other provisions of this EPA and also provided that such changes do not cause a decrease in the average expected Delivered Energy, or the expected Dependable Plant Capacity to be provided during the Peak Winter Period."

Request:

(a) Please fully explain the changes to the section titled "Enhancements of Existing Plant Using THELP's Plant" from the original submission to the revised.
(b) Please explain how "material adverse effect" will be determined under Section 7.3 of the amended EPA.
(c) How will it be determined that "changes do not cause a decrease in the average expected Delivered Energy, or the expected Dependable Plant Capacity to be provided during the Peak Winter Period"?

YEC-YUB-014

Reference: **Updated application, black-lined version, page 26, PDF page 30**
Issue: **Moon Lake**
Quote: Figure 4-1 and Table 4-1 indicate a forecast YIS N-1 capacity shortfall for winter 2024/25 without the Project of 17.2 MW related to non-industrial YIS load. Without the Atlin Project and the Moon Lake Pumped Storage Project, this capacity shortfall increases to 27.6 MW by 2027/28 (requiring 16 of 1.8 MW diesel rental units, plus any spares needed to support these units), and then to 41.5 MW by 2030/31 (requiring 24 rented diesel units). [footnotes removed]

Request:

(a) Please explain why it was necessary to add the words "Atlin" and "and the Moon Lake Pumped Storage Project" to this paragraph.

(b) If the words identified in part (a) were not included, would the capacity shortfall numbers change?

YEC-YUB-015

Reference: **Updated application, black-lined version, page 30, PDF page 34**
Issue: **Steady state operation**
Quote: The Project's capability to displace LTA thermal energy generation is enhanced by its hydro storage which enables the 8.75 MW of dependable capacity during the PWP and by the amended Project design that enables materially enhanced dispatch capability for the Project during the Winter Period. The amended Operating Rules required for the Project (see Section 2.3.2 of this Submission) no longer require reasonably steady state operation at full capacity to the extent practicable during the PWP when LTA thermal energy generation is forecast to be required. [underlining added]

Request:
In the original EPA, there was a requirement for steady state operation at full capacity. Please explain why that steady state operation at full capacity is no longer required under the amended EPA.

YEC-YUB-016

Reference: **Updated application, black-lined version, page 30, PDF page 34, footnote 34**
Issue: **Modeled water years**
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 modeled water year flows as reviewed in Appendix A, Table A1. The Project LTA energy generation in Appendix A, Tables A1 and A3 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 modeled water years [Although the Winter Period includes period to May 31, the LTA energy delivery at 34.0 GWh was modeled to May 15 to exclude energy from freshet,] [sic]The transmission losses between the Atlin generation location and delivery point at Jakes Corner is estimated to be at around 2.7%. Additional losses of 4.5% are added that reflect losses on the YIS system for estimated energy delivered from Jakes Corner to YEC's substation S150 at Whitehorse (these added losses take into account the material portion of the Delivered Energy expected to be used to supply customer loads on the southern Yukon AEY System and assume that AEY System Upgrades will result in continuation of past average losses on this AEY System despite the material increases in energy being transmitted on this system).

Request:
(a) Please describe what review and testing YEC has undertaken with respect to SNC Lavalin's modeled water year flows.

(b) Do the modeled results include all the years 1994 to 1999 inclusive? Please explain.

(c) If the years 1994-1999 are included, how were the modeled water year flows calculated given that YEC has previously stated that information for those years was not available?

YEC-YUB-017

Reference: **Updated application, black-lined version, page 30, PDF page 34, footnote 33 and page A1-79, PDF page 167**

Issue: **Operating rules**

Quote: See Schedule D of the Amended EPA. The Operating Rules as amended enable one hour dispatch (versus three days required with the Original EPA), provide ability in all seasons to change dispatch between 100% of capacity and 1MW at the generation plant (versus the prior winter requirement for minimum flow at 65% of capacity to protect ice conditions), enable YEC to schedule four changes per day, and enable YEC one day in advance to adjust its dispatch schedule in response to changes in weather forecasts or YIS system conditions.

Request:

(a) Is the change to the penstock from a power canal the only factor that changed the operating rules? Please explain.

(b) The new operating rules include frequent and regular communications between Whitehorse and Atlin that was not present in the original EPA. How will this affect operations?

(c) Please explain Exhibit D-1.

YEC-YUB-018

Reference: **Updated application, black-lined version, page 34, PDF page 38**

Issue: **Operating lease**

Quote: There is some uncertainty with respect to what, if any impact the Amended 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) Please provide an analysis showing the financial impact to rate base if YEC were to record the amended EPA as a capital lease.

(b) If YEC's auditors determine the amended EPA is best recorded as a capital lease, would that be a force majeure event or circumstance?

(c) If the auditors determined that the amended EPA should be recorded as a capital lease, when would YEC apply for approval of the capital leasing costs in rates? Please explain.

YEC-YUB-019

Reference: **Updated application, black-lined version, page 37, PDF page 41**
Issue: **Fuel prices**
Quote: Fuel prices for the Amended EPA are reasonably consistent with prices mandated for SOP IPP renewable energy supplies on the YIS, i.e., based on fuel prices at the outset of the Amended EPA with annual escalation at 50% of CPI.

Request:

(a) Why are fuel prices set at the beginning of the EPA with a 50% CPI escalator as opposed to a reset of fuel prices after every GRA with an escalator used between GRAs? Please explain.

(b) What statistical analysis has YEC undertaken regarding trending fuel prices compared to the application of a 50% CPI escalator over a 40-year period?

(c) For this particular EPA, was YEC's position that it was bound by the SOP IPP term to escalate at 50% of CPI? Please explain.

YEC-YUB-020

Reference: **Updated application, black-lined version, page 38, PDF page 42**
Issue: **Monthly constrained energy**
Quote: The revised Project design's materially enhanced dispatchability has also materially reduced the ratepayer cost risks for Monthly Constraint Energy by enabling curtailment of wasted water flows quickly (no longer than one hour) and to no more than a requirement for 1MW/hour at the Powerhouse.[45]

Request:

Please provide a further explanation of how this is advantageous to YEC and Yukon ratepayers.

YEC-YUB-021

Reference: **Updated application, black-lined version, page A-3, PDF page 49**
Issue: **Modeled deliveries**
Quote: Assumes 9.3 MW at Turbine, 9.2 MW after all losses at Atlin plant, approximately 8.7 MW delivered at Jakes Corner at full capacity. Daily generation estimates based on 70% flow being taken from SNC modeled series (using hydrologic model with daily climate data at Atlin from 1964 to 2020) and 30% from Knight Piesold modeled series (using a different hydrologic model to simulate the hydrology of the Pine Creek watershed).

Request:

(a) The quote includes modeled climate data for 1964 to 2020 at Atlin and Pine Creek. What evidence can YEC provide that the hydrologic data for Pine Creek watershed is applicable to that for Atlin?

(b) Does the Pine Creek data include any data points for low water years? If so, what years are considered low water years and what is the threshold for what is considered low water?

(c) Was there a low water event at Atlin during the years 1993-1999? Please explain.

(d) If there was a low water event in 1993-1999 at Atlin and that is not included in the data, what impact does that have on the LTA?

(e) If YEC were to remove water values for the years 1993-1999 for its LTA determinations, what effect would that have on LTA?

YEC-YUB-022
Reference: Updated application, black-lined version, page A-6, PDF page 52
Issue: Table A2 - updated energy profile

Preamble: Updated Table A2 reduces the dispatchable energy during the prime winter peak (November/December) and provides more on the shoulder winter peak (April and September).

Request:
Please fully discuss the effect of the change noted in the preamble.

YEC-YUB-023
Reference: Updated application, black-lined version, page A-8, PDF page 54, figure A1
Issue: Energy profile and dispatchable option

Request:
(a) Please provide definitions of "Dispatchable Option at Jakes Corner" and "Updated Energy Profile".
(b) What is the difference between Dispatchable Option at Jakes Corner and Updated Energy Profile?

YEC-YUB-024
Reference: Updated application, black-lined version, page B-3, PDF page 73
Issue: Dependable plant capacity
Quote: Project capability to provide Dependable Plant Capacity to Yukon Energy at Jakes Corner has been estimated for the Peak Winter Period ("PWP") from December 16 to the end of February based on expected Delivered Energy provided to Yukon Energy estimated on the basis of modeled water availability to Seller's Plant during 51 modeled water years (see Appendix A, Table A1) and assumed Seller's Plant operation each day at either 100% or approximately 11% of full capacity (assumes minimum 1 MW generation at the plant per Operating Rules).

Request:
(a) Explain the significance and impact of moving from actual water years to modeled water years.

(b) Please explain the significance of the change from 65% of full capacity to 11% of full capacity.

YEC-YUB-025

Reference: **Updated application, black-lined version, page B-3, PDF page 73**
Issue: **December deliveries**
Quote: Based on the referenced LTA delivered energy estimates and assuming approximately 52% of December deliveries are in the PWP, expected LTA energy deliveries during each PWP over the 51 modeled water years would equal at least 14 GWh and be sufficient to enable a full 8.75 MW of capacity to be delivered to YEC at Jakes Corner for more than 85% of the 75 or 76 days in the PWP, which is more than enough days to cover all of the PWP period when minus 30ºC or lower temperature has been recorded at Whitehorse during the PWP period. [underlining added]

Request:

(a) Why is only approximately 52% of December deliveries in the PMP rather than 100%?

(b) The second underlined passage changes the coverage (original application to amended application) from 94% to 85%. Does this imply a lower reliability? Please explain why or why not.

YEC-YUB-026

Reference: **Updated application, black-lined version, page B-4, PDF page 74**
Issue: **Surprise Lake**
Quote: If Surprise Lake is not full in the prior October, it has been confirmed that so long as the Existing Plant and battery load does not exceed 9 GWh/year, water availability is expected to be adequate for LTA delivered energy to YEC during the PWP to be at least 12 GWh, which is sufficient to enable a full 8.75 MW of capacity to be delivered at POI for over 54 full days (assuming the balance of PWP days at approximately 11% of 8.75 MW), i.e., confirmed ability to accommodate at full capacity at least one two-week cold temperature period plus at least 40 additional days if needed.

Request:

(a) Please provide a full explanation for the statement in the above quote.

(b) If, in the scenario described in the above quote, only 11% of the capacity is available, does that mean all contracted energy deliveries cannot be met and that YEC would receive less capacity than contracted for in the EPA?

YEC-YUB-027

Reference: **Updated application, black-lined version, page B-5, PDF page 75**
Issue: **Interconnection Agreement**
Quote: Interconnection Agreement: Section 2.1(d)(i) of the Amended EPA Conditions Precedent specifies that, on or before May 31, 2022, the three parties (Seller, Buyer and AEY) will have entered into the Interconnection Agreement. Section 2.1(d)(ii) of the Amended EPA Conditions Precedent specifies that, on or before May 31, 2022, these same parties will have agreed on the budgeted costs for the AEY System Upgrades.

Preamble: The original application stated that the interconnection agreement would be completed by January 31, 2022. In the Round 1 IR responses, that date moved to March 31, 2022. The date in the amended EPA application is May 31, 2022.

Request:

(a) Please confirm that if the interconnection agreement is signed by May 31, 2022, that the agreement will be filed on the record of the proceeding.
(b) If the agreement is not signed by May 31, 2022, what is the impact to the amended EPA? In your response, please comment on any delays or other expected consequences to the delivery of energy under the amended EPA.

YEC-YUB-028

Reference: **Updated application, black-lined version, pages B-4 – B-5, PDF pages 74-75**
Issue: **Conditions precedent**

Preamble: Section 2 of Appendix B lists several conditions precedent that are due May 31, 2022.

Request:

(a) The budgeted costs of AEY, the funding plan, environmental authorizations, government approvals, TRTFN approval, and other consents (e.g., BC Hydro and The Canada Life Insurance Company of Canada) are due by May 31, 2022. Please provide the funding plan, environmental authorizations and TRTFN approval in your IR responses.
(b) Explain the consequences if any of the requested conditions precedent are not completed by the May 31, 2022 deadline.

YEC-YUB-029

Reference: **Amended IR responses, black-lined version, YUB-YEC-1-34, PDF page 112**
Issue: **Modeled water years**
Quote: Appendix A, Table A1 in the Amended Submission includes 51 modeled water years from 1970 to 2020. Therefore 1994-2014 is now included.

Request:

(a) Please explain what is included in the modeled data.
(b) Are there any historical water years from which the modeled data is based? If so, what years of actual data are included?

(c) In the part (b) response to the information request, losses have changed from 6.2% (original response) to 4.5%. Please explain why this change was made. What confidence interval does YEC apply to the lower loss figure?