Yukon Energy Corporation
2021 General Rate Application

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

YUB-YEC-1-01

Reference: **Application - Overview, Energy & Peak Load Changes, pages 1 to 4**
Issue: **Energy and Peak Load Changes (8.4% of revenue shortfall)**
Quote: "Dependable capacity requirements caused by peak load growth for non-industrial sales drives diesel rental costs that account for $3.8 million (34.9%) of the 2021 GRA revenue shortfall."

Request:

(a) Based on the current load forecast, please provide the incremental costs on a per kWh basis for the diesel rental units using only the rental and set-up costs.

(b) Based on the current load forecast, please provide the incremental variable costs on a per kWh basis for the diesel rental units.

(c) Considering YEC's current load forecast, does the sum of the rental costs (response to part (a)) and the variable costs (response to part (b)) equal YEC's incremental cost of generation? If not, please explain and provide the incremental cost for generation, separately identifying the portion based on fixed costs, variable costs and total costs on a per kWh basis.

YUB-YEC-1-02

Reference: **Application – Overview: PDF pgs. 2-5; Summary of Requested Orders: PDF pgs. 5-7; Retail & Industrial: PDF pg. 62**
Issue: **2021 Rates**
Quote: "Approval of an increase of the current YEC Rider J by 15.01 percentage points, starting no later than December 1, 2021 applicable to all YEC and AEY retail firm rates (all AEY recoveries from this rider would flow through to YEC) and to all major industrial firm rates, including the fixed Rider F charge of 0.211 cents/kWh."

Request:

Please provide a discussion of rebasing, and not rebalancing, the rates — by incorporating Rider J into base rates, for example — in a potential compliance filing to any decision on this application. Include a discussion of any challenges and benefits to implementing a rebasing of rates.

YUB-YEC-1-03

Reference: **Application, Section 1.1, Need, context and proposed approach for 2021 GRA, Table 1.1, page 1-1**
Issue: **YEC Return on Equity**

Request:
Please revise Table 1.1 to include 10 years of historical information on both an approved and actual basis commencing with the year 2012. Please state all assumptions relied on as a result of the requested revision.

YUB-YEC-1-04

Reference: **Application, Section 1.3, Changes in Forecast Loads, page 1-7**
Issue: **Industrial Load**
Quote: "Forecast firm Yukon Energy sales to industrial customers for the 2021 test year is 102.9 GW.h."

Request:
The 2021 load increase over 2018 approved load forecast for Victoria Gold Group and Alexco Resources is 67.2 GWh. Please provide the 2018 approved load forecast for Minto mine.

YUB-YEC-1-05

Reference: **Application, Section 1.3, Peak Capacity and N-1/LOLE requirements in test years, page 1-8**
Issue: **Diesel Rental Units**
Quote: "Diesel rental unit costs of approximately $3.8 million are forecast for the diesel rental units expected to be required for the 2021 GRA test year."

Request:
(a) Please provide the additional firm capacity of the diesel rental units.

(b) For 2021, how much energy is forecast to be generated from the diesel rental units?

YUB-YEC-1-06

Reference: **Application, Section 1.4, pages 1-8, 1-9**
Issue: **VGC Group and Alexco Fixed Charge**
Quote: "As reviewed in Appendix 4.3 of this Application, YEC expects to file with the Board in late November/ early December 2020 for approval of an amended Transmission Facilities Fixed Cost effective January 1, 2021 of $428,812, resulting in an interim Fixed Charge (85% of the Transmission Facilities Fixed Cost) effective January 1, 2021 of $35,734 per month, with allocation of the interim Fixed Charge between VCG Group and Alexco [Table 4.3-2, Appendix 4.3 of this Application]."

Request:
Please confirm that the amended Transmission Facilities Fixed Cost application is part of this application. If not confirmed, then please explain when the application will be filed with the Board.

YUB-YEC-1-07

Reference:	**Application, Section 2.1, pages 2-1**
Issue:	**Sales – Overview**
Quote:	"Yukon Energy directly serves about 2,300 customers at the distribution (retail) level, most of whom live in and around Dawson City, Mayo and Faro. Indirectly, Yukon Energy also provides power to Yukon retail customers served on the Integrated System (including those located in Whitehorse, Carcross, Carmacks, Haines Junction, Ross River and Teslin, Pelly Crossing, Keno and Stewart Crossing) through its wholesale sales to ATCO Electric Yukon (AEY)."

Request:
Please provide the incremental per unit ($/kWh) of sales revenue YEC would receive for the next kWh of energy sold above the forecast: 1) Using a blended rate based on this application that incorporates retail, wholesale and industrial customers; and 2) including and specifying all applicable riders. Please explain any assumptions that are necessary in your response.

YUB-YEC-1-08

Reference:	**Application, Appendix 2.1, Table 2.1-1, page 2.1-1**
Issue:	**Expected Thermal Generation**

Request:
Please expand Table 2.1-1 down to grid load of 350 GWh.

YUB-YEC-1-09

Reference:	**Application, Tab 2, page 2-2, line 16**
Issue:	**Total Firm Generation Load**
Quote:	"Overall, **total firm generation load** to be supplied by Yukon Energy on the Yukon Integrated System was forecast at 420.3 GW.h in the 2018 Compliance Filing. Actual total firm generation load was 450.1 GW.h in 2018 reflecting higher sales compared to the forecast. Actual total firm generation load in 2019 was 440.7 GW.h, and full year forecast for 2020 is 508.0 GW.h. Forecast total firm generation load for the 2021 test year is 538.7 GW.h."

Request:
What was the forecast total firm generation load on the Yukon Integrated System for 2019?

YUB-YEC-1-10

Reference: **Application, Tab 2, page 2-3, line 19**
Issue: **Independent Power Production**
Quote: "Independent Power Production (IPP) renewable generation is forecast to commence in November 2020 with less than 0.4% of forecast generation impact for 2021."

Request:

(a) What is YEC's level of certainty regarding the forecast IPP amounts for 2021? Please explain.

(b) How have IPP projects been affected to date by the COVID-19 pandemic? Did the IPP commence in November 2020, as scheduled?

YUB-YEC-1-11

Reference: **Application, Tab 2, page 2-4, line 2**
Issue: **Forecast Renewable Generation**
Quote: "This impact is starting to be offset by new renewable generation planned as part of Yukon Energy's 10 Year Renewable Electricity Plan, commencing with the new IPP generation forecast to provide 0.06 GW.h of solar generation in 2020 and 2.0 GW.h of new renewable generation in 2021 based on information available at the time of filing."
Preamble: The Board requires additional information with respect to YEC's forecasts being based on "information available at the time of filing".

Request:

(a) What specific information did YEC rely on to forecast the new renewable generation?

(b) To what date was information available in preparing these forecasts?

YUB-YEC-1-12

Reference: **Application, Tab 2, page 2-5, line 21**
Issue: **Working with ATCO Electric Yukon on Forecasts**
Quote: "YUB Order 2018-10 directed YEC to refine its methodology of forecasting Wholesale Sales to ensure its forecasts align closely with the AEY forecasts in future applications. To develop YEC's Wholesale Sales forecasts for the test years, YEC worked closely with AEY. YEC reached out to the AEY Regulatory team and YEC and AEY staff worked closely to understand forecasting methodology and inputs into the respective forecasts. AEY cautioned YEC that AEY's forecast is for business plan purposes and it did not necessarily undergo the same rigor as a forecast that AEY would file in a GRA.

Request:
Please explain how the forecasting process for business planning is different from the forecasting process for a GRA.

YUB-YEC-1-13

Reference:	**Application, Tab 2, page 2-5, footnote 4**
Issue:	**Information Provided by Energy, Mines and Resources**
Quote:	"YEC has forecast a micro-generation impact of about 1.5 GW.h for 2021. The micro-generation forecasts are based on information available from Energy Mines & Resources of the Yukon government."

Request:
Please provide the source information provided to YEC by the Department of Energy, Mines and Resources and any other information from the Department that informed or influenced YEC's micro-generation forecasts for this application.

YUB-YEC-1-14

Reference:	**Application, Tab 2, page 2-7, line 5**
Issue:	**Potential Mine Load Additions**
Quote:	"Yukon Energy continues to monitor the situation with respect to prospects for additional connected industrial mine loads within the next few years. Yukon Energy is not aware of any other potential near term mine loads that could be connected to the grid."

Request:
Please explain how and using what methods YEC monitors for potential additional industrial connections.

YUB-YEC-1-15

Reference:	**Application, Tab 2, Section 2.2, page 2-4**
Issue:	**Sales Forecast**

Request:
(a) How does YEC incorporate new residential and commercial construction into its sales forecasts?

(b) How has YEC incorporated the effect of increased numbers of people working from home, due to the COVID-19 pandemic, into its sales forecasts?

YUB-YEC-1-16

Reference: **Application, Tab 2, page 2-7, line 15**
Issue: **Residential Sales Forecasts**
Quote: "Actual firm residential retail sales were 15.6 GW.h in 2018 and 15.4 GW.h in 2019; the full year forecast for 2020 is 16.7 GW.h and for the 2021 test year is 16.2 GW.h. The higher forecast sales in 2020 reflect colder than normal weather and modest growth in the number of customers. Residential sales forecasts are done on a community by community basis and are based on historical averages and input from YEC staff that is obtained through their work in the communities."

Request:

(a) With respect to YEC's statement that "higher forecast sales in 2020 reflect colder than normal weather", what is the time period used by YEC to determine "normal weather"?

(b) With respect to YEC's statement that higher forecast sales in 2020 reflect modest growth in the total number of customers, please provide the number of customers served by AEY and YEC for the last ten years, along with forecast customer counts for 2020 and 2021.

(c) What input from YEC staff was obtained from work in the communities?

(d) Please provide tables showing actual and forecast residential sales for the past ten years, both with and without demand side management. In your response, please comment on the YEC's residential sales forecasting accuracy for those years.

YUB-YEC-1-17

Reference: **Application, Tab 2, page 2-8, line 5**
Issue: **Sales for Lighting**
Quote: "Actual firm retail sales for lighting were 235 MW.h in 2018, 178 MW.h in 2019 and forecast to remain at 178 MW.h for 2020 and for the 2021 test year. The decrease in lighting sales in 2019 was primarily due to conversion to LED street lights."

Request:

Please provide the quantity, type and power consumption of all lights for the past ten years.

YUB-YEC-1-18

Reference: **Application, Tab 2, page 2-8, line 21**
Issue: **Losses**
Quote: "Total generation is based on the sum of total sales plus losses. The 2018 approved forecast losses were 8.8%. Actual losses were 9.2% in 2018 and 2019, and full year forecast for 2020 is 9.1%. The losses are forecast at 8.8% for the 2021 test year which is the same as the 2018 approved level in the 2017/18 GRA and also within the range of historical losses for last three years, from 2017 (at 8.1%) through 2018 and 2019 (each at 9.2%)."

Request:
Please provide the detailed working document, with formulas intact, used to determine and justify YEC's forecast for losses in the test year.

YUB-YEC-1-19

Reference:	**Application, Tab 2, page 2-11, line 23**
Issue:	**Thermal Generation Forecast and Weather**
Quote:	"For the 2020 full year forecast actual LNG is forecast to be about 74% of the total thermal due to colder-than-normal weather (specifically January 2020 was colder than normal weather) that resulted in high loads with diesel generation being required to supply baseload energy as LNG units were running at max output."

Request:

(a) Please explain what constitutes "colder-than-normal weather" and how it is determined (e.g. coldest temperature during the month, average temperature, number of days below a certain temperature).

(b) Please outline the performance of the LNG facility in 2020, including any mechanical issues or outages, and any increased costs resulting from failures due to burning diesel required to make up for any loss or shortfall in LNG output.

YUB-YEC-1-20

Reference:	**Application, Tab 2, page 2-12, footnote 14**
Issue:	**Hydro Generation**
Quote:	"This reflects 37 MW at Aishihik, 6.5 MW at Mayo and 27 MW at Whitehorse. The Mayo GS dependable capacity has been reduced from 9 MW assumed in the 2017-18 GRA to reflect updated winter downstream flow restrictions and Whitehorse GS increased from 24.5 MW to 27 MW to reflect increased winter max flows."
Preamble:	YEC's website states: "The Mayo A hydro facility has served Yukoners since 1951. It was developed to supply electricity to the United Keno Hill Mine at Elsa, about 45 kilometres north of Mayo. It also generates power for other Yukon communities via Yukon Energy's transmission system. The Mayo B hydro project, completed in 2011, involved building a new powerhouse 3.7 kilometres downstream from the existing hydro plant (Mayo A). This increased our capacity to generate additional renewable energy at the existing site from five megawatts to 15 megawatts, without the need for a new dam or reservoir. Together the two plants can supply electricity to as many as 7,000 non-electrically heated homes."

Request:

(a) Please explain the changes, and when the changes occurred, which led to the increased winter max flows for Whitehorse GS.

(b) Please provide the dependable capacity and the energy generated per year of Mayo A and Mayo B (each shown separately) from the time period previous to the re-runnering of Mayo A.

(c) Please compare the results provided in part (b) to the expected performance of Mayo A and B as stated in the preamble to this question. Please explain any variances.

(d) If there is a deviation between the expected performance of Mayo A and B and actual performance, please explain if this will be an issue with the re-runnering project for the Whitehorse GS. If it will not be an issue, then explain how the issue will be avoided.

YUB-YEC-1-21

Reference: **Application, Tab 2, page 2-13**
Issue: **Dependable Capacity Requirements**

Request:

In YEC's view, are revisions to the loss of load expectation and emergency N-1 standard warranted? Please explain why or why not.

YUB-YEC-1-22

Reference: **Application, Tab 2, Table 2-1 and Table 2-2, pages 2-16 and 2-17,**
Issue: **Additional Historical Information**

Request:

Please provide new versions of Table 2-1 and Table 2-2 that include the previous ten years.

YUB-YEC-1-23

Reference: **Application, Tab 2, Table 2-2, line 7, page 2-17**
Issue: **Whitehorse Hydro Generation**

Request:

Please explain why Whitehorse hydro generation is forecast to decrease from 2020 to 2021.

YUB-YEC-1-24

Reference: **Application, Section 3.5.1, page 3-27**
Issue: **Cost of debt**
Quote: "As per Board Order 2018-10, the interest rate is a formulaic approach based on the long-term Canada Bonds rate plus 120 basis points (Government of Canada Long-Term Bond Benchmark at 0.99% as of June 30, 2020)."

Request:
Please provide the long-term Canada Bonds rate as of September 30, 2020 and December 31, 2020.

YUB-YEC-1-25

Reference:	**Application, Section 3.5.2, Return on Common Equity, page 3-27**
Issue:	**BCUC Benchmark ROE**
Quote:	"The current BCUC benchmark ROE continues to be 8.75%."

Request:
(a) Please identify the most recent BCUC decision approving a BCUC benchmark ROE of 8.75%. Please identify the date the decision was issued and relevant paragraph(s) and page reference(s) regarding the BCUC benchmark ROE in the response.

(b) Is YEC aware of any generic cost of capital (GCOC) or equivalent proceedings currently before the BCUC? If so, please provide further context.

YUB-YEC-1-26

Reference:	**Application, Section 3.2, page 3-3**
Issue:	**Fuel and Purchased Power**
Quote:	"As reviewed in Section 2.3.2, Yukon Energy's annual fuel costs are based on forecast hydro and thermal generation determined on a long-term average basis. This analysis applies only to firm load requirements."

Request:
Please confirm that the long-term average forecast hydro and thermal generation used in the forecast includes industrial load. If not included, please explain.

YUB-YEC-1-27

Reference:	**Application, Section 2.3.2, page 2-11**
Issue:	**Diesel and LNG Thermal Generation**
Quote:	"The forecast 2021 LTA thermal generation for the Application is 84.3 GW.h. The forecast for the test year is based on proposed updates to the determination of LTA annual hydro availability for the current GRA as outlined in Appendix 2.1…"

Request:
Relative to LTA water flows, is YEC expecting water levels to be higher than LTA for 2021 and therefore higher than LTA hydro generation for 2021? Please explain why or why not.

YUB-YEC-1-28

Reference: **Appendix A to Board Order 2018-10, paragraphs 76 and 77; Application, Section 3.2, page 3-3; Application - Overview, pages 2 to 5; Application, Section 1.1, Need, Context and Proposed Approach for 2021 GRA, page 1-3**

Issue: **Short-term Versus Long-Term Average Hydro Generation Forecast**

Quote: From Appendix A to Board Order 2018-10:

"76. The Board recognizes that each method of forecasting, being LTA or ST, has advantages and disadvantages for GRA purposes. As submitted by YEC, during a period of favorable water conditions an ST hydro generation forecast would have a lower revenue requirement than one based on an LTA hydro generation forecast. The converse holds for periods when water conditions are unfavorable. With ST hydro generation forecasts, the impacts on revenue requirements, rate changes and resulting bills will change with each GRA depending on changes in ST water conditions and forecasts. LTA hydro generation forecasts will tend to be more stable for revenue requirements from GRA to GRA. However, items affected by this forecast may not be as accurate or representative of current GRA circumstances. For the current GRA, major differences in ratepayer bill impacts with ST versus LTA hydro generation forecasts are likely to be limited if the current rate stabilization mechanism is retained. The Board accepts that short-term thermal generation may vary materially between GRAs due to changes in actual water conditions. LTA hydro generation forecasts are based on available historic annual water records as well as current grid conditions and generation facilities to indicate ongoing average hydro generation capability over a longer period of the hydro asset life.

77. Given the above-noted advantages and disadvantages of LTA and ST hydro generation forecasts, the Board finds that, for purposes of this proceeding, it will not use the ST forecast for forecasting levels of hydro electric generation and thermal generation nor direct its use for future GRAs. In determining the revenue requirements for these and future test years, the Board is focusing on the reasonableness of the forecasts and forecasting accuracy. Further, the onus is on YEC to adequately explain any variance between actual results and its forecast amounts. For these reasons, the Board directs YEC in future GRA filings to show actual hydro and thermal generation results when comparing previous and forecast test years." (footnotes removed; underlining added)

From page 3-3 of the Application:

"Fuel and Purchased Power costs as set out in Table 3.2 for the 2021 test year increase to $15.897 million (from $2.677 million in 2018 approved), reflecting primarily both increased load and higher fuel prices, as well as added purchased power cost [$0.314 million] for Independent Power Production (IPP)."

From page 2 of the Application:

"Yukon ratepayers have also experienced large bill increases in late 2019 and many are now experiencing ongoing disruptions due to the COVID-19 pandemic."

From page 1-3 of the Application:

"Yukon ratepayer bills – Concurrent with Yukon Energy's dilemma, Yukon ratepayers now are experiencing ongoing disruptions from the impacts of COVID-19. Any material increases to ratepayer bills at this time (and in the near future) would raise concerns."

Preamble: There have been instances in the past where LTA was not used to determine YEC's thermal generation forecast costs. Most recently, this occurred when the Board directed YEC to use actual thermal costs for the 2017 test year.

Request:
If water levels and the concomitant hydro generation are expected to be higher in 2021, for customer rate relief, should YEC utilize a ST hydro forecast thus reducing the upward pressure of increased thermal generation costs for this test period? In the response, please address the following:

(a) For YEC's revenue requirement forecasts, the Board focuses on reasonableness of the forecasts and the forecasting accuracy;
(b) YEC, in the past, has stated that its LTA forecast cannot be retroactively verified[1];
(c) If ST hydro forecasts are used, what the impact would be on required revenue; and
(d) The ongoing impacts of COVID-19 and related costs pressures on Yukon ratepayers.

YUB-YEC-1-29

Reference: **Application - Overview, Summary of Requested Orders, pages 2 to 6**
Issue: **Low Water Reserve Fund (LWRF) Term Sheet**
Quote: "Yukon Energy acknowledges that it has been directed in Board Order 2019-08 to review and update the LWRF Term Sheet in this GRA, and to provide any further views on its risk and ratepayer risks that YEC considers relevant. Yukon Energy has been required, given COVID 19 conditions and other factors related to minimizing any bill impacts on ratepayers, to focus first on completion and filing of its 2021 forecast revenue requirement and rates Application. Yukon Energy is working to complete and file an updated LWRF Term Sheet with the Board as soon as feasible."

[1] For example, from the Application to Revise the Diesel Contingency Fund ("DCF") & Related Amendments to the Energy Reconciliation Adjustment ("ERA") – YEC Interrogatory Responses, YEC-YUB-1-4(b), PDF page 252, lines 20-23.

Request:

(a) Without a LWRF term sheet, how is YEC able to determine its LTA thermal generation requirements? Please explain.

(b) Without a LWRF term sheet, how is YEC able to determine any transaction or amounts with respect to the LWRF deferral account? Please explain.

YUB-YEC-1-30

Reference:	**Application, page 6; Application, LWRF, Section 3.6.3, Tab 3, pages 3-30 to 3-31**
Issue:	**Low Water Reserve Fund (LWRF)**
Quote:	"Yukon Energy has been required, given COVID 19 conditions and other factors related to minimizing any bill impacts on ratepayers, to focus first on completion and filing of its 2021 forecast revenue requirement and rates Application. Yukon Energy is working to complete and file an updated LWRF Term Sheet with the Board as soon as feasible."

Request:

(a) Please state when an updated LWRF Term Sheet will be made available. If a precise date is not available, please provide YEC's best estimate.

(b) How can the Board or interveners test the reasonableness of the LWRF in the absence of an updated term sheet? Please explain.

YUB-YEC-1-31

Reference:	**Application, Tab 2, Table 2-2, page 2-17, lines 13-17; Application, Tab 3, page 3-3, line 2**
Issue:	**Diesel Generation**
Quote:	"The increase from 2018 to 2021 reflects higher production and labour costs, including $3.834 million costs for diesel rentals required to meet the N-1 single contingency capacity planning criteria (no diesel rental costs were included in the 2018 approved costs)."

Request:

Within the context of forecast reductions in thermal generation from 2020 to 2021 as shown in Table 2-2, why is YEC forecasting an additional $3.834 million for rental of diesel generators?

YUB-YEC-1-32

Reference:	**Application, Section 3.2, Fuel and Purchased Power, page 3-3**
Issue:	**Thermal Generation Mix**
Quote:	"The test year long-term average forecasts for hydro generation have been updated to reflect new information, and forecast long-term average thermal requirements for the test years are assumed to be supplied with a combination of 90% LNG and 10% diesel generation, the same ratio as approved in the 2018 GRA."

Request:

(a) Please provide the actual thermal generations ratios/percentages for each year since YEC has been utilizing LNG as a fuel source.

(b) In regard to the response to part (a), please explain how an LTA of 90% LNG and 10% diesel generation was derived and determined to be accurate for use in this proceeding.

(c) Does YEC take on all risk with respect to any changes between actual and forecast results for changes in the thermal generation fuel ratios?

YUB-YEC-1-33

Reference:	**Application, Section 3.2, Fuel and Purchased Power, page 3-5**
Issue:	**Forecast Thermal Costs – LNG**
Quote:	"Forecast LNG delivered price to Yukon Energy's Whitehorse thermal facility for the 2021 test year is $0.4824 per litre, which reflects the expected average delivered LNG cost. This forecast for LNG cost is based on the results of a public competitive tender process completed in late 2019 for liquefaction and shipping costs and current market price for commodity value. Yukon Energy forecasts average efficiency for LNG generation of 2.66 kW.h/litre, which is the average efficiency based on actual results for 2019. The resulting forecast LNG cost is $0.1814/kW.h. The approved 2018 LNG price was $0.1467/kW.h."

Request:

(a) Please explain why a 2020 competitive tender process was not used to determine the forecast delivered price.

(b) Please provide a breakdown and reasons for the increase in LNG costs from $0.1467/kWh to $0.1814/kWh.

(c) Please explain why only a 2019 average efficiency was used for LNG generation.

(d) Please include the fuel price forecasts for LNG and diesel from the Part 3 LNG proceeding in 2014 and compare with actuals.

YUB-YEC-1-34

Reference:	**Application, Section 3.2, Fuel and Purchased Power, page 3-6**
Issue:	**Purchase Power Costs**
Quote:	"The purchase cost for the IPPs in 2021 is assumed at $0.1583/kW.h based on the latest approved thermal fuel cost for YEC in its 2017/18 GRA. Total IPP purchase cost is forecast at $0.314 million for 2021." (footnote removed)

Request:

(a) Why are the purchase costs from intermittent IPPs in 2021 based on the forecast thermal fuel cost for YEC?

(b) Given the IPPs currently in place, is the expected purchase of 1.983 GWh of energy likely to occur? Please explain why or why not.

(c) Has there been discussion of variable rates for IPPs that would recognize the increased value of winter generation?

YUB-YEC-1-35

Reference: **Application, page 5 and Section 3.6.2, Defined Benefit Pension Deferral Account, page 3-29**

Issue: **Stabilization Mechanisms**

Quote: From page 5:

> "Defined Benefit Pension Deferral Account: Approval of defined benefit pension plan deferral account as set out in Section 3.6.2 that captures variances in contributions to the defined benefit pension plan from the cost included in the test year revenue requirements as a result of the required annual actuarial evaluations."

From page 3-29:

> "Yukon Energy is required to file updated actuarial valuation reports on an annual basis with valuation reports determining the required funding for the next year. The actual contributions for the year can vary from the forecast depending on market conditions and the performance of the pension plan assets. The proposed deferral account protects both the utility and ratepayers from variances in required contributions over the amounts included in test year revenue requirement. For the 2021 test year, the defined benefits pension plan cost is $0.720 million."

Request:

(a) Please prepare a high-level outline of YEC's history (including the relevant timeline and events) with respect to any previous use or request to use a defined benefit pension deferral account.

(d) Please explain why the "similar deferral account … approved for [ATCO Electric Yukon] AEY by Board Order 2014-06" should apply in the circumstances of YEC. Please identify the similarities and differences between the "similar deferral account" approved for AEY in 2014 and the defined benefit pension deferral account proposed by YEC in the current GRA.

(e) Please clarify if the "required annual actuarial evaluation" was submitted by YEC and, if so, provide a reference to where details of the evaluation can be found in the current application. If not submitted, please provide the "required annual actuarial evaluation".

(f) Please provide historical details of YEC's "defined benefits pension plan cost" for the years 2018-2020 on an approved and actual basis in comparison to YEC's forecast 2021 cost of $0.720 million. Please include any details respecting current service payments from special payments.

(g) Given there is an annual actuarial evaluation conducted, on what basis would there be variances in required contributions over the amounts included in the test year revenue requirement that would support deferral treatment as necessary?

(h) What circumstances have changed recently such that YEC now considers a defined benefit pension deferral account necessary?

(i) Please provide details addressing both the requirement for and the specific mechanics of YEC's proposed defined benefit pension deferral account including proposals for a future true-up of the same.

YUB-YEC-1-36
Reference: **Application, Section 3, Revenue requirement**
Issue: **YEC Revenue Requirement**

Request:
Please revise Table 3.1, Table 3.3, Table 3.4, Table 3.5, Table 3.8, and Table 3.9 to include 10 years of historical information on both an approved and actual basis commencing with the year 2012.

YUB-YEC-1-37
Reference: **Application, Section 3.3, Non-Fuel Operating and Maintenance (O&M) Expenses, pages 3-7 and 3-8**
Issue: **Non-labour and labour inflation rates**

Request:
(a) Please clarify if YEC applied or used an inflation rate (or escalation factor) in arriving at its forecast non-labour O&M expenses for the year 2021. If confirmed, please provide all support for the non-labour inflation rate used in YEC's 2021 forecast amounts (for example, provide excerpts from the most recent Yukon Economic Outlook documentation) and identify which non-labour O&M expenses the inflation rate was applicable to. If not confirmed, please explain YEC's method for forecasting its non-labour O&M expenses for the year 2021.

(b) Please provide the actual 2018-2020 non-labour inflation rates experienced by YEC.

(c) Please provide the actual 2020 labour inflation rate experienced by YEC and clarify whether the labour costs shown on Table 3.3 (page 3-7) and included in the forecast 2020 costs of $12,727 reflect this inflation rate.

(d) Please clarify if any collective bargaining agreements that will be settled in 2021 for the fiscal period 2020 are expected to be applied retroactively to January 2020 or some other date and, if so, explain if and how YEC has accounted for this anticipated future liability for regulatory purposes.

(e) Please confirm YEC's statement that the "forecast 2020 and 2021 labour rates include estimated economic increments of 2%" means that 2019 actual labour costs were inflated by 2% to arrive at 2020 forecast labour costs, followed by 2020 forecast labour costs being inflated by an additional 2% to arrive at 2021 forecast labour costs. If not confirmed, please fully explain how the increments of 2% were applied.

(f) Please explain why a labour inflation rate of 2% remains reasonable for either of the years 2020 or 2021 given the current economic conditions surrounding the COVID-19 pandemic. Please clarify whether YEC's forecast labour inflation rate of 2% is consistent with Yukon Economic Outlook documentation. If so, please provide the relevant excerpts from the most recent Yukon Economic Outlook documentation for each of the years 2020 and 2021.

(g) Please identify any additional costs or savings experienced by or actively sought by YEC during 2020 as a result of the current economic conditions surrounding the COVID-19 pandemic.

(h) Referring to the response to part (g) above, are any additional costs or savings experienced by or actively sought by YEC during 2020 as a result of the current economic conditions surrounding the COVID-19 pandemic anticipated to continue into the year 2021? If so, please identify and quantify the additional costs or savings to YEC for the year 2021.

YUB-YEC-1-38

Reference: **Application, Section 3.3, Non-Fuel Operating and Maintenance (O&M) Expenses, pages 3-8 and 3-9**

Issue: **Labour Costs (Section 3.3.1)**

Quote: "Table 3.4 shows that the total position count is forecast to increase by 9.90 positions since 2018 approved to 2021 test year.

At the historic staff level, employees were finding it difficult to keep pace with increased demands, more so as additional assets are added and increasing burden for planning and executing capital works. In recent years overtime hours have increased creating additional workload and adverse effect for the existing employees which in turn resulted in an increase in employee turnover. The increase in employee turnover has increased the recruiting and relocation costs for the forecast years."

"To combat the above issues, YEC is forecasting an increased employee complement. The increase in employee complement has resulted in significant decrease in forecast overtime costs for 2021. Also, the increased employee complement in 2019 through 2021 is due to an effort, where possible, to do more work internally as opposed to hiring outside consultants and contractors. YEC has made a conscience effort to limit increases to only those areas where required as reviewed below."

Request:

(a) Please update Table 3.4 to include YEC's actual employee complement as of December 31, 2020. Please include an explanation for any variances between YEC's 2020 forecast 97.86 employee complement and 2020 actual employee complement.

(b) In light of the current economic conditions surrounding the COVID-19 pandemic, does YEC anticipate an increase or decrease in employee turnover in 2021?

(c) Please provide YEC's employee turnover (number of employees resigned or retired) and vacancy rate on an actual basis for the years 2018-2020 and forecast basis for the years 2020 and 2021.

(d) Please prepare a table quantifying the "recruiting and relocation costs for the [2020 and 2021] forecast years" and compare these amounts to the recruitment and relocation costs experienced by YEC on an actual basis for the years 2018-2020.

(e) Please prepare a table quantifying the "forecast overtime costs for [2020 and] 2021" and compare this amount to the overtime costs (including both O&M and capital related) experienced by YEC on an actual basis for the years 2018-2020.

(f) Please prepare a table quantifying the costs of outside consultants and contractors on an actual basis for the years 2018-2020 and on a forecast basis for the years 2020-2021. In the response, please ensure that the type of consultant and contractor work being performed on behalf of YEC has been identified. (For example, the cost of the consultant and contractor work as related to O&M, capital, administrative, regulatory or other.)

YUB-YEC-1-39

Reference: **Application, Section 3.3.1, Non-Fuel Operating and Maintenance (O&M) Expenses, pages 3-8 to 3-13**

Issue: **Labour Costs (Section 3.3.1)**

Request:

(a) Please clarify how many employees will report to YEC's proposed "1.00 position increase in 2021 due to … a Vice President, First Nation Relations." (page 3-10)

(b) Please confirm whether "Yukon Energy's 5-Year Strategic Plan, published in 2019, confirmed YEC's commitment to establishing mutually beneficial and strategic partnerships with Yukon First Nations governments" (page 3-9) and is intended to be subject to testing in the current GRA. If confirmed, please explain fully why this is the case.

(c) Please explain whether it is YEC's understanding that it is responsible for fulfilling consultation obligations where they arise with respect to potential impacts on s. 35 rights (Section 35 of the Constitution Act, 1982).

(d) Please elaborate on YEC's new position (Vice President, First Nation Relations) and how it will expand YEC's current ability to move projects forward.

(e) Given that the name for the "Finance, Customer Billing/Accounting and Purchasing" category (page 3-11) continues to reference the words "Customer Billing/Accounting," please clarify whether any "Customer Billing/Accounting" personnel remain in the originating group after the 2020 transfer of 2.10 positions to the "Communications, Customer Accounting" (page 3-10) category.

(f) Referring to the categories identified in Table 3.4 (page 3-8) and including the proposed "1.00 position increase in 2021 due to the addition of a new full-time position, Senior Communications Advisor" (page 3-10), please clarify how many communication personnel in total will be employed by YEC and in which Table 3.4 category or categories these employees reside.

(g) Please clarify the role of YEC's communication personnel in relation to YEC's internal versus external communication requirements.

(h) Please quantify how many external communication issues, such as customer complaints, were submitted to YEC for resolution during each of the years 2018-2020. Of these submissions, please quantify how many were resolved in each year by YEC and how many were forwarded to the YUB for resolution.

(i) With respect to YEC's Resource Planning and Environment category, please clarify what is referred to as the "backlog of planning work designation for completion" (pages 3-10 and 3-11) for which YEC has proposed to add a two-year resource planning engineer position to assist with. In the response, please also clarify which capital projects have been delayed as a result of the referenced planning work backlog.

(j) With respect to YEC's Resource Planning and Environment category, please clarify if YEC's "2020 10-Year Renewable Electricity Plan" (pages 3-10 and 3-11) is intended to be considered by the Board in the current GRA. If confirmed, please explain fully why this is the case. Please provide a reference to where YEC's Electricity Plan has been provided in its application; otherwise, please submit a copy of the report in response to this IR.

(k) With respect to YEC's Resource Planning and Environment category, please identify the priority initiatives recommended in the "2020 10-Year Renewable Electricity Plan" (pages 3-10 and 3-11) which YEC has proposed to address by adding a senior project manager. In the response, please also quantify how many employees are currently engaged in any of the priority initiatives and whether any are proposed to now report to the new senior project manager.

(l) Please explain whether procurement personnel have historically been within the "Finance, Customer Billing/Accounting and Purchasing" group and provide the quantity of employees responsible for procurement in that or any other group up to the year 2020. Will YEC's proposed "1.00 position increase … of a new full-time position, Procurement Administrator" (page 3-11) result in less work for those employees previously responsible for procurement work up to the year 2020? If so, please explain where has YEC incorporated the incremental benefits of hiring a full-time procurement administrator in its revenue requirement.

(m) In relation to YEC's procurement activities, please provide quantifiable evidence that YEC has experienced "increased workload in the department due to greater volume of high dollar projects" (page 3-11) during each of the years 2018-2020 on an actual basis.

(n) In relation to YEC's procurement activities, please explain why there are "increasingly complex contracting strategies for some capital projects, including the additional requirements of the First Nation procurement policy, which has increased the complexity and administrative support required for large project procurement." (page 3-11) In the response, please confirm that it is the Yukon Government First Nation Procurement Policy being referred to, whether that policy applies to Yukon Energy, and also identify the additional requirements of YEC to follow that policy.

(o) In relation to YEC's procurement activities, please explain and provide context with respect to "the need to allow departmental management to concentrate on policy renewal and development and education for client managers new to YEC." (page 3-11).

(p) In relation to YEC's operations, please confirm that the "1.00 position increase in 2018 due to the addition of a new full-time position, Maintenance Mechanic to address additional responsibilities (e.g., LNG assets)" was contemplated in YEC's original LNG project business case. If confirmed, please provide a reference to the business case where an increase in employee complement was identified as being required.

(q) In relation to YEC's operations, please provide the per cent increase over 2020 actual plant operator personnel that the total 1.75 position increase in plant operators will represent. (page 3-12)

(r) In relation to YEC's engineering services, please confirm that the "1.00 position increase in 2020 … of a new full-time position, Electric Engineer" (page 3-12) occurred on an actual basis during the year 2020.

(s) Please provide YEC's capital to maintenance allocation ratios on an actual basis for the years 2018-2020. (page 3.13)

YUB-YEC-1-40

Reference: **Application, Section 3.3.2, Production, pages 3-13 and 3-14**
Issue: **Production Costs – Diesel Rentals**
Quote: "Diesel rentals [cost increase of $3.834 million over 2018 approved GRA]: Costs of mobile diesels to address dependable capacity shortfalls (see Tab 2, section 2.4) is forecast to increase to $3.834 million in 2021 as compared to actual 2018 costs of $1.048 million and no costs included as part of 2018 Approved costs. Forecast mobile diesel costs are based on negotiated contracts with the vendor."

Request:
Please provide all quantitative evidence demonstrating a competitive supply for YEC's diesel rental costs on an actual basis for the period 2018-2020.

YUB-YEC-1-41

Reference: **Application, Sections 3.3.3 and 3.3.4, Non-Fuel Operating and Maintenance (O&M) Expenses, pages 3-14 to 3-16**
Issue: **Transmission and Distribution Brushing Allocations**
Quote: "The major portion of the transmission cost variance relates to changes in the annual brushing cost requirements and changes in the allocation of brushing budgets between transmission and distribution lines. Table 3.6.1 provides further details on the brushing allocations." (pages 3-14 and 3-15)

"The fluctuation results from changes in brushing allocations between transmission and distribution lines. Table 3.6.1 provides further details on the brushing allocations." (page 3-16)

Request:
(a) Please identify and fully explain all reasons for the changes in "brushing allocations between transmission and distribution lines" noted by YEC and referenced in the above quotes.

(b) Referring to Table 3.6.1 (page 3-15), please explain why YEC's 2019 Actual brushing costs were almost exclusively related to transmission brushing activities (98%) as compared to a more typical 78-85% (transmission related) as observed for the other years identified in the table.

YUB-YEC-1-42

Reference: **Application, Section 3.3.5, General Operation and Maintenance, pages 3-16 and 3-17**

Issue: **General Operation and Maintenance**

Quote: "Labour costs are forecast to decrease by $0.017 million in 2020 from 2018 approved. Total forecast costs in the non-labour General O&M categories in 2021 are $0.172 million higher than approved 2018 costs of $1.219 million. Transportation expenses are forecast to increase $0.051 million (10%) in 2021 over 2018 approved. Maintenance of Company Owned Properties is expected to increase $0.090 million (18%) in 2021 over 2018 approved. SCADA Communication expenses are forecast to increase by $0.031 million (15%) in 2021 under 2018 approved."

Request:

(a) Please provide variance explanations for all per cent changes between 2018 approved and 2021 forecast costs noted by YEC in the above quote.

(b) Please respond to part (a) on the basis of changes between 2020 and 2021 forecast costs.

(c) Please detail any measures to be taken by YEC to control or reduce its overall general operation and maintenance costs in 2021.

YUB-YEC-1-43

Reference: **Application, Section 3.3.6, Administration, pages 3-17 and page 3-18**

Issue: **Administration Costs**

Request:

(a) Please detail any measures taken by YEC to control or reduce its overall administration costs forecast for 2021.

(b) Please clarify whether YEC's forecast increase in general administration expense related to new asset management software was contemplated in any related business case and, if so, please provide a reference to the cost benefit analysis conducted in that business case.

(c) Please clarify why YEC's general administration expense forecast for 2021 is anticipated to increase over 2020 forecast costs given the explanation for the increase between 2018 and 2021 costs as noted in part (b) above.

(d) Please explain why YEC's Board of Directors expenses have not decreased given restrictions related to the COVID-19 pandemic and requirements to conduct meetings virtually.

(e) Please quantify the number of Board of Directors meetings held during the year 2020 on an actual basis and forecast for the year 2021.

(f) Please describe the nature of and reason for any training proposed for YEC's Board of Directors.

YUB-YEC-1-44

Reference: **Application, Section 3.3.7, pages 3-18 to 3-20**
Issue: **Insurance and Reserve for Injuries and Damages (RFID)**
Quote: "Yukon Energy's costs for insurance in 2021 are forecast to increase by $0.392 million (38%) above approved 2018 costs of $1.031 million, and are based on the completed 2020 annual renewal process. Costs in 2020 increased due to mid-year market rate adjustments (overall rate increase of 25% on commercial package) and increased insured asset value. Costs in 2021 increase primarily due to a full year impact of the 2020 rate increase [most of the costs for the 2021 fiscal year are already locked by the insurance policy renewables in 2020 due to insurance year cycle differences from YEC's fiscal year]. The market rate increases experienced by YEC as part of 2020 renewals are consistent with peer utilities in Canada."

"The large expense in 2020 reflect works required in Whitehorse hydro generation facility penstock [about $0.730 million], Whitehorse LNG Unit #2 [$0.4 million], LNG Vapourizer [$0.3 million] and other small projects. In 2021 test year, YEC is forecasting annual costs of $0.411 million."

Request:

(a) Please provide the availability statistics for each of the LNG units by year since inception.

(b) In light of your response to part (a), please comment on the reliability of each of the LNG units.

(c) Please clarify whether the insurance year or renewal cycle has changed for either YEC or its insurance company from those used in prior GRAs.

(d) Please clarify whether YEC examined alternative insurance coverage from other providers in order to keep insurance cost increases to a minimum. Please explain all resources and alternatives YEC examined.

(e) Please provide further details for each of the respective LNG-related RFID claims comprising the $1,598 thousand Forecast 2020 annual cost as noted in Table 3.11.1.

(f) Please clarify whether YEC follows a policy for processing of claims against its RFID account and, if so, please provide the policy or a reference to the most recent version of the RFID policy by which YEC is guided.

(g) Please explain the rationale for amortizing the $2,121 thousand Forecast 2020 RFID balance over a period of five years, as opposed to any other period of time.

(h) Please explain why YEC did not include 2020 forecast RFID charges in its determination of a 10-year average annual charge as shown in Table 3.11 (page 3-19).

(i) Please revise Table 3.11 and Table 3.11.1 to include an Actual 2020 column that incorporates a 10-year average annual charge that incorporates 2020 actual (annual charge) information.

YUB-YEC-1-45

Reference: **Application, Section 4.4.2, pages 4-6 to 4-8**
Issue: **VGC and Alexco Fixed Charge**
Quote: "Board Order 2018-04 also directs YEC to submit a limited scope application to amend the firm mine rate within 60 days of the Transmission Facilities Development Operation Date (Paragraph 57). The Transmission Facilities Development Operation Date is forecast to occur in late November 2020/early December 2020 when the Transmission Facilities Development comes into service, connecting the McQuesten Substation with a substation at Mayo. Yukon Energy's limited scope application to the Board to be filed when this development comes into service is described in Appendix 4.3 based on forecast costs and YEC's approved 2018 GRA cost of capital."

"The interim Fixed Charge for 2021 will also be subject to adjustment and Board review and approval as part of YEC's 2021 GRA. YEC understands that the final Transmission Facilities Fixed Cost and an adjusted Fixed Charge for VGC Group and Alexco for 2021 will be determined subsequently based on YEC's final compliance filing as approved for the 2021 GRA (including actual costs as then known for the relevant new facilities) and also based on adjustments as required after 2021 year end to reflect actual MWh loads of VGC Group and Alexco and any adjustments as needed for actual costs as then known for the relevant new facilities."

Request:
Please clarify what YEC is requesting from the Board in the above quotes. Specifically, is YEC asking the Board to approve an interim Fixed Charge for 2021 in the current proceeding and to determine the final Fixed Charge in a separate application to be filed within 60 days of the Transmission Facilities Development Operation Date?

YUB-YEC-1-46

Reference: **Application, page 5-23**
Issue: **Section 5.3.1.2, Demand Side Management**
Quote: "The context within which Yukon Energy has approached Demand Side Management (DSM) has materially changed since the Board made the following DSM related determination in Board Order 2018-10 (paragraph 482):

The Board is not persuaded that YEC should continue to operate DSM projects. YEC has indicated the benefits of expanding the program and submitted that its programs have met or exceeded key performance indicators. However, the Board notes that the Yukon government has DSM incentive programs in place, and the Board is of the view that it is better to leave DSM projects to government, rather than having ratepayers fund these projects. For these reasons, the Board is of the view that continuation of DSM programs by YEC is not necessary.

> Since that determination the Yukon Government has put in place a Climate Change policy initiative called "Our Clean Future: A Yukon Strategy for Climate Change, Energy and a Green Economy" which emphasizes the importance of DSM as a valuable resource to reduce the Yukon's energy and capacity requirements. As part of that policy the government fully expects Yukon Energy to pursue a cost-effective DSM program.
>
> Pursuant to this policy initiative and the Government's expectations, and further given DSM remains a cost-effective means of reducing energy and capacity requirements, Yukon Energy has included in the proposed 2021 rate base the expenditures for the programs and activities as reviewed below. (footnotes removed)

Request:

(a) What is meant by the statement "the context within which Yukon Energy has approached Demand Side Management (DSM) has materially changed"?

(b) Given your response in part (a), how should the Board evaluate whether there is a "material change" in the context (i.e. circumstances) since Board Order 2018-10 was issued?

(c) To the extent that the content of discussions can be disclosed, please describe Yukon government discussions with YEC regarding the DSM programs YEC has applied for in this proceeding, particularly in light of the Board's finding in paragraph 482 of Appendix A of Board Order 2018-10 that the continuation of DSM programs by YEC was not necessary. Please also summarize any discussions on scope, quantum, and timing of the applied-for DSM programs.

(d) Please explain to what extent policy directions stated by Yukon Government in the climate change policy initiative "Our Clean Future: A Yukon Strategy for Climate Change, Energy and a Green Economy" are binding on the Yukon Utilities Board. If these directions are not binding, please explain how the Yukon Utilities Board should consider those policy directions in its review of YEC's applied-for DSM programs.

(e) Please explain why policy initiatives supported by Yukon Government should be funded by ratepayers through their utility bill, as opposed to through government supported initiatives such as taxation or other means. In addition, please provide YEC's view on how the two options might differently affect low-income households.

(f) Please explain how YEC considered rates and rate base provisions of the *Public Utilities Act* in its proposal for demand-side management. In your response, please specifically identify how the DSM programs are the property of a public utility used or required to be used to provide service to the public.

(g) On November 19, 2020, the Court of Appeal of Yukon heard an appeal regarding Board Order 2019-05 (in which the Board dismissed YEC's request to review Board Order 2018-10) in relation to DSM costs. What impact, if any, is there on the Board's consideration of the applied-for DSM costs in this proceeding given that the outcome of the Court of Appeal of Yukon's decision on the appeal remains outstanding?

(h) Please explain YEC's management decision to include the DSM policy initiatives in the current application rather than in its next GRA? Please explain why these initiatives are required to be completed in 2021.

YUB-YEC-1-47

Reference: **Application, Section 5.3.1.2, page 5-23, line 14**
Issue: **Effect of DSM on Energy and Capacity Requirements**
Quote: "Since that determination the Yukon Government has put in place a Climate Change policy initiative called "Our Clean Future: A Yukon Strategy for Climate Change, Energy and a Green Economy" which emphasizes the importance of DSM as a valuable resource to reduce the Yukon's energy and capacity requirements. As part of that policy the government fully expects YEC to pursue a cost-effective DSM program." (footnote removed)

Request:

(a) Please provide any analysis or research compiled by YEC, or its program partners, that supports the conclusion that DSM can reduce Yukon's energy and capacity requirements.

(b) Please provide any analysis YEC, or its program partners, has carried out examining the effect of YEC's DSM projects to date on the energy and capacity requirements for YEC and the associated cost savings compared to the costs of the DSM programs.

(c) Please comment on the potential effects on rates should DSM programs administered by YEC lead to a significant decline in energy sales. In particular, please provide YEC's view of whether it is possible for ratepayer-funded DSM programs to lead to increased rates as a result of declining energy sales.

(d) Please provide the results of any analysis carried out by YEC, or its program partners, with respect to the ability of seasonal pricing to reduce peak energy and capacity demand. If YEC has not carried out any such analysis, please explain why.

YUB-YEC-1-48

Reference:` **Application, Tab 5, pages 5-1 to 5.6-1**
Issue: **Accuracy of Capital Project Forecasting**
Preamble: The Board wishes to evaluate the accuracy of YEC's project cost and timeline forecasting and YEC's ability to control project costs.

Request:

(a) For all projects brought before the Board in YEC's 2008-09 GRA, 2012 GRA, 2016-17 GRA and 2017-18 GRA, please provide a table showing the original forecast cost and completion date provided to the Board and the final cost and completion date.

(b) Based on the information provided in response to part (a), please comment on the accuracy of YEC's cost and timeline forecasts.

YUB-YEC-1-49

Reference: **Application, Tab 5.2.1, pages 5-5, 5-7, 5-8, 5-11, 5-13, 5--15 to 5-19 and 5-32**

Issue: **Costs for Capital Works Projects Greater Than $1 Million**

Preamble: In this section of its application, YEC outlined the costs for Capital Works projects greater than $1 million as follows:

- For the LNG Third Engine Project, YEC indicated that it spent $3.156 million in 2017, $5.008 million in 2018 and $0.097 million in 2019.
- For the N-1 Capacity Shortage Whitehorse Thermal Rental Site Infrastructure Project, YEC indicated it spent $0.227 million in 2018 and $1.070 million in 2019.
- For the N-1 Capacity Shortage Faro Thermal Rental Site Infrastructure Project, YEC indicated a forecast of $2.037 million in 2020.
- For the Mayo – McQuesten Transmission Line Upgrade Project, YEC indicated it spent $0.501 million in 2019, indicated a forecast of $20.000 million in 2020 (offset by a $15.274 million contribution) and indicated a forecast of $11.200 million in 2021 (offset by a $8.4 million contribution).
- For the McQuesten Substation Project, YEC indicated it spent $0.123 million in 2018 and $11.496 million in 2019 (offset by a $10.688 million contribution).
- For the Transmission Line Refurbishment Project, YEC indicated it spent $4.272 million in 2019.
- For the Transmission Line Refurbishment – L178 Project, YEC indicated a forecast of $1.3 million in 2021.
- For the Breaker Replacement Program Project, YEC indicated it spent $0.479 million in 2018 and $1.781 million in 2019.
- For the Replacement of the P125 Head Gate Project, YEC indicated it spent $0.093 million in 2019, indicated a forecast of $2.300 million in 2020 and indicated a forecast of $3.500 million in 2021.
- For the WH2 Uprate Project, YEC indicated it spend $3.044 million in 2019, indicated a forecast of $1.693 million in 2020 and indicated a forecast of $7.300 million in 2021.
- For the WH4 Uprate – Servomotor Replacement Project, YEC indicated it spent $0.052 million in 2018, $0.079 million in 2019, indicated a forecast of $0.400 million in 2020 and indicated a forecast of $1.000 million in 2021.

YEC stated it reflected these costs in Table 5.2.1 in its application, found from pages 5-32. It is not clear how YEC allocated these costs over the previous years and how it plans to allocate these costs in its forecasted years.

Request:

Please provide a cost breakdown for the projects provided in the preamble. More specifically, provide the activities conducted (or the activities YEC forecasts to conduct) and the cost amount allocated to each activity.

YUB-YEC-1-50

Reference: **Application, Tabs 5.2.1.1 and 5.2.1.2, pages 5-5, 5-7 and 5-8**

Issue: **The LNG Third Engine, N-1 Capacity Shortage Whitehorse Thermal Rental Site Infrastructure and N-1 Capacity Shortage Faro Thermal Rental Site Infrastructure projects**

Quotes: From page 5-5 of the Application:

"The LNG Third Engine Project provides a third natural gas-fired generation unit of approximately 4.4 MW at the Whitehorse thermal plant to help address the existing dependable capacity shortfall in a cost effective manner. YEC is required to provide sufficient dependable winter capacity to meet the single contingency capacity reliability criterion, i.e., there is no acceptable "do nothing" option given the need to maintain reliable service, and permanent solutions (rather than relying on temporary options such as mobile diesel) are needed to address an ongoing and growing dependable capacity shortfall." (footnote removed)

From page 5-7 of the Application:

"The [N-1 Capacity Shortage Whitehorse Thermal Rental Site Infrastructure Project] involved the design of infrastructure to accommodate temporary rented thermal generators at Whitehorse substation to address the capacity shortfall projected under the N-1 for 2018/19 and 2019/20 winters.

In winter 2018/19 six temporarily rented 1.8 MW units were installed in the proximity of S150 Whitehorse Rapids Substation. The 2019 project included installation of two additional temporarily rented 1.8 MW units in the area between P126 Whitehorse Diesel and S150 Whitehorse Substation. The project scope included … installation support temporary seasonal diesel power generators to meet seasonal N-1 load requirements and assist with meeting winter system peaks. Total project cost was approximately $1.298 million."

From pages 5-7 to 5-8 of the Application:

"The [N-1 Capacity Shortage Faro Thermal Rental Site Infrastructure] involves the design and installation of temporary rental site electrical infrastructure at Faro (870S) to ensure YEC can continue to meet its N-1 capacity planning requirements … The project is expected to be completed in 2020 at an estimated budget of $2.037 million. The project is on track for a mid-November 2020 in service date."

Request:

(a) Please provide the studies that were conducted showing the N-1 capacity criterion was being violated prior to the development of the LNG Third Engine, N-1 Capacity Shortage Whitehorse Thermal Rental Site Infrastructure and N-1 Capacity Shortage Faro Thermal Rental Site Infrastructure projects.

(b) Please provide the studies that were conducted to show that these projects met the N-1 capacity criterion.

(c) Given that the LNG Third Engine Project was required as a permanent solution to meet the N-1 capacity criterion, please explain why YEC carried out the Whitehorse Thermal Rental Site Infrastructure and Faro Thermal Rental Site Infrastructure projects, which installed temporary infrastructure.

(d) Given that the Whitehorse Thermal Rental Site Infrastructure and Faro Thermal Rental Site Infrastructure projects involve temporarily rented generators and temporary electrical infrastructure, please explain if YEC plans to implement a permanent solution in the future to meet the N-1 capacity criterion. For example, will the Battery Energy Storage System project discussed on page 5.1-5 of the Application replace the need for these projects?

(e) Please provide an update on the Faro Thermal Rental Site Infrastructure Project, which had an in-service date of November 2020. Additionally, please indicate whether work was carried out by YEC staff or consultants. If external consultants were hired, please explain the competitive process that was followed.

YUB-YEC-1-51

Reference: **Application, Tab 5.2.1.3, pages 5-8 to 5-10**
Issue: **The Mayo-McQuesten Transmission Line Upgrade Project**
Quotes: From page 5-8 of the Application:

> "The Mayo – McQuesten Transmission Line (MMTL) project involves the construction of a new 138 kW framed transmission line from the Mayo to McQuesten substations as well as the installation of electronic voltage support equipment (Statcom) at Stewart Crossing South substation that will improve overall reliability and power quality in the system. The [Mayo – McQuesten Transmission Line Upgrade Project] transmission will initially be operated at 69 kV.
>
> The existing 69 kV transmission line from Mayo to Keno constructed by the Northern Canada Power Commission (NCPC) in 1951 is at end of life and in need of replacement. The transmission line has experienced both reliability and power quality issues with an increasing number of outages on the line affecting customers on a system wide basis. Key requirements under the VGC Group PPA include development of the McQuesten Substation plus new transmission to replace the existing 69 kV facilities between at least Mayo and McQuesten by approximately summer of 2020." (footnote removed)

From page 5-9 of the Application:

"Later stages will proceed only when loads in the area justify increasing the operating voltage to 138 [kV], and when additional federal funding becomes available … Increased power transfer/ capacity will also support economic development in central Yukon, as well as connection of renewable energy sources such as hydro, wind and solar."

"Effects assessment and stakeholder engagement development activities for all project stages were undertaken in 2015 and 2016. As reported during the 2017-18 GRA, all project permits were in place, including the land use permit, access permits and highway permits. No additional permitting was anticipated to be required." (footnote removed)

From page 5-10 of the Application:

"Decommissioning of the old 69 kV line is expected to occur between November 2020 and December 2020. Substation construction at Stewart Crossing commenced in August 2020 and is expected to be completed by June 2021. An order has been placed for the Statcom and it is in manufacturing. Statcom delivery is expected to occur by August 2021, with installation in September 2021 and commissioning completed by October 2021."

Request:

(a) Please provide the reliability criteria YEC utilizes in assessing the viability of its electric system (e.g. the thermal limit ratings and acceptable voltage range on transmission lines).

(b) Please provide and explain the studies that were conducted to show that the existing 69 kilovolt (kV) transmission line had reliability and power quality issues. For example, did YEC carry out a contingency analysis that showed this line exhibited reliability criteria violations?

(c) Please explain how often YEC carried out studies and assessed the reliability of the existing 69 kV transmission line in the past.

(d) Please explain why YEC proposed to install STATCOM in this project. Were any other alternatives to STATCOM explored (e.g. static VAR compensators or synchronous condensers)? If other alternatives were explored, please provide the costs of these alternatives and the reasons these alternatives were dismissed.

(e) Please provide the number and duration of outages experienced on the line in the last 10 years, on a per annum basis, and the costs incurred due to these outages.

(f) Please provide and explain the studies that were conducted to show the Mayo-McQuesten Transmission Line Upgrade Project resolved reliability and power quality concerns.

(g) Please explain if any other alternative solutions were proposed and explored. If applicable, please provide and explain the studies conducted on these alternatives and provide the costs of these alternatives.

(h) Given that YEC plans to operate this new line initially at 69 kV and future load will need to justify an operating voltage of 138 kV, please explain why YEC considered it prudent to spend capital on infrastructure designed for 138 kV.

(i) Please explain if there were any concerns brought up during stakeholder engagement sessions and if there are any outstanding concerns to date.

(j) Please provide details on the selection process of contractors for this project, including how contracts were awarded for this project.

(k) Based on the information provided in page 5-10 of the Application, please provide an update on the project. For example, did YEC decommission the old 69 kV line?

YUB-YEC-1-52

Reference: **Application, Tab 5.2.1.4, page 5-13**
Issue: **McQuesten Substation Project**
Quotes: "Total cost estimated for the McQuesten Substation during the VGC PPA proceeding were $8.529 million (assuming no need for a Step Down transformer)…"

"YEC has received an asset contribution from VGC Group valued at $10.688 million, and has incurred a net cost of $0.931 million (related to added facilities to enable future 138 kV service operation if required)." (footnote removed)

Request:

(a) Please explain in what circumstances YEC would require a step-down transformer in this substation and the likelihood of such a transformer in the near future.

(b) Please explain the assets included in the $10.688 million contribution amount and whether this amount will equate to future 138 kV service operation, if required.

YUB-YEC-1-53

Reference: **Application, Tab 5.2.1.5, pages 5-13 to 5-14**
Issue: **Transmission Line Refurbishment Project**
Quotes: "YEC's 138 kV Whitehorse-Aishihik-Faro (WAF) transmission system was constructed in the late 1960's and early 1970's, and plays a critical role linking key hydro generation sources to load centres in Whitehorse and on the northern grid. Recent studies as well as a detailed line assessment in 2017 indicated that key components of the WAF system were at end of life, in poor condition, and required replacement."

"Specifically, certain components of these lines had begun to exhibit higher failure rates. Based on these events, YEC commissioned external asset assessments of the key backbone lines on the integrated system as noted above. These assessments indicated that a large number of cross arms and insulators are at end of life with a high risk of failure." (footnote removed)

Request:

(a) Please provide and explain the studies (including the detailed line assessment conducted in 2017) that were conducted to show that key components of the WAF transmission system were at end of life, in poor condition and required replacement. For example, what reliability criteria were violated, and were contingency analyses performed?

(b) Please explain how often YEC carried out studies and assessed the reliability of the WAF transmission system in the past.

(c) Please explain which components of the system began exhibiting higher failure rates and whether this system experienced any outages. If so, please provide the number and duration of outages experienced in the last 10 years, on a per annum basis, and the costs incurred due to these outages.

YUB-YEC-1-54

Reference: **Application, Tab 5.2.1.6, pages 5-15 to 5-16**

Issue: **Transmission Line Refurbishment – L178 Project**

Quotes: "Outages on the L178 currently trip at S164 (Takhini Substation) and can result in an outage on the Takhini-Carmacks L170 transmission line. Failure to complete this element of the refurbishment project would increase the risk of component failure on L178 resulting in a split in the North-South grid and significant thermal generation costs in the northern gird to maintain supply to all customers."

"The $1.3 million budget will cover the work done in 2021, which is only a portion of the full L178 transmission line refurbishment forecast to cost $8.3 million (costs to be brought into rate base each year as each year's work is completed)."

Request:

(a) Please provide the number and duration of outages on transmission line L178 experienced in the last 10 years, on a per annum basis, and the costs incurred due to these outages.

(b) Please explain when YEC expects this project to be completed.

(c) What is the expected annual frequency and duration of outages due to component failure on L178 if this project is not completed? What costs would YEC continue to incur if the project is not completed? Given the expected frequency and duration, please estimate the additional annual costs resulting from the need for additional thermal generation due to those outages.

YUB-YEC-1-55

Reference: **Application, Tab 5.2.1.7, page 5-16**
Issue: **Breaker Replacement Program Project**
Quotes: "The project involves replacement of twelve aging circuit breakers in various substations throughout the Yukon, including the replacement of five 34.5 kV Medium Voltage (MV) and five 138 kW High Voltage (HV) breakers. Many of the breakers are 40 years old, replacement parts are not available and any damage to aging components could result in lengthy outages to implement repairs or eventual replacement of a breaker, impacting system reliability. Restricted operation of some breakers and non-routine maintenance are becoming increasingly frequent."

"Replacement of 7 high voltage (138kV) breakers in YEC substations at Aishihik Faro, Riverside and Takhini: this was initiated in 2018 and was to be completed in 2019. The high voltage breaker replacement program was completed in 2019 with a total cost of $2.26 million." (footnote removed)

Request:

(a) Please explain how often YEC tested the breakers involved in this project to assess their reliability in the past 40 years and how often maintenance work was required. If possible, please provide the number of times maintenance was conducted on these breakers in the last 10 years, on a per annum basis, and the cost of this maintenance work.

(b) YEC stated that five HV breakers were being replaced in one instance of its application and that seven HV breakers were being replaced in another instance. Please confirm the correct number of HV breakers being replaced in this project.

YUB-YEC-1-56

Reference: **Application, Tab 5.2.1.8, pages 5-17 to 5-18**
Issue: **Replacement of the P125 Head Gate Project**
Quotes: "The P125 Hydro Plant originally commissioned in 1958 … The headgates at the P125 plant are located above the plant at the water intake structure … To date, the headgates have never been overhauled."

"An external engineering firm (SNC Lavalin) performed tests and structural assessments of the P125 headgates in 2019 that indicate that the headgates can no longer be relied upon for emergency closure or for single device isolation. The gates were tested, in a controlled situation, to determine if they would close during emergency conditions and two out of the three gates did not close. This failure could result in a unit runaway / over-speed that could potentially cause severe damage to the unit as well as the plant."

> "The scope of the project includes the removal of existing headgates, design and installation of new headgates and control systems, and refurbishment of the headgate hoist mechanism. YEC tendered and proceeded with work on the WH2 headgate in 2020 … It is expected that the WH2 headgate will be completed in 2020 at a forecast cost of $2.3 million."
>
> "… is assessing team capacity to complete replacement and refurbishment of the gates and related infrastructure for units WH1 and WH3 in 2021 … and that the WH1 and WH3 headgates will be completed in 2021 at a forecast cost of $3.5 million."

Request:

(a) Please explain how often YEC tested out the headgates at the P125 Hydro Plant in the past to assess their reliability and how often maintenance work was required. If possible, please provide the number of times maintenance was conducted on the headgates in the last 10 years, on a per annum basis, and the cost of this maintenance work.

(b) Please provide the tests, structural assessments and any other studies conducted to show that the headgates could no longer be relied upon.

(c) Please provide and explain the studies conducted to mitigate the concerns brought on by the existing headgates. For example, how was the design of new headgates and control systems carried out, and how was the preferred solution reached? Please describe the results of the assessment in which it was determined that work on the WH2 headgate needed to be carried out before work on the WH1 and WH3 headgates.

(d) Please indicate whether work for the WH2 headgate was completed in 2020. Did YEC staff complete this portion of the project, or was an external consultant required? If an external consultant was required, please provide details on the selection process of the contractor and how costs were awarded.

(e) Please provide an update on the work currently completed for the WH1 and WH3 headgates. For example, what objectives have been met so far, and is YEC expecting this portion of the project to be completed by 2021? Additionally, will YEC complete this portion of the project, or will an external consultant be required?

YUB-YEC-1-57

Reference: **Application, Tab 5.2.1.9, pages 5-18 to 5-19**

Issue: **WH2 Uprate Project**

Quotes: "Whitehorse Hydro #2 (WH2) was commissioned in 1958 and is one of the three units installed at P125. It is a Kaplan Turbine unit with nominal rating of a 5.8 MW and is currently operating with the original runner, rotor, stator and windings from 1958. **WH2 asset health has been declining due to its age, and there is an increased risk of failure and related unplanned outages and costs**. Specifically, the generator has exceeded a typical winding life of 40 years; and issues have been identified with oil leaks at the runner blade to hub seals and with possible voids in the concrete behind the draft tube liner. In the circumstances, **it was considered prudent to rewind the generator** in order to mitigate

> these risks and their potential reliability and cost implications. External studies also determined that unit efficiency would be improved with a new runner of modern design." (emphasis added)
>
> "In 2017, Hatch completed an economic assessment of various uprate options at the Whitehorse Rapids Generating Station (WRGS). The report concluded that the uprating of the WH1 or WH2 units would be the most cost-effective option and provide the best payback of the WRGS hydro units. Management selected the uprating of WH2 over WH1 since there are existing known issues with the WH2 governor, and the uprating project would resolve these issues."
>
> "The project is planned to be implemented over a three year period (2019-21), and is expected to add 6.4 GWh/yr additional hydraulic generation to the grid [starting in the third quarter of 2021]. The project is also expected to increase dependable capacity of WH2 by 0.94 MW… YEC contracted Litostroj Power to undertake the runner fabrication with the following concurrent activities planned for 2020: governor fabrication, balance of plant civil construction; balance of plant P&C design completion, relace of balance of plant request for proposal, and delivery of materials to Whitehorse."

Request:

(a) Please explain how often YEC carried out tests on WH2 in the past to assess its reliability and how often maintenance work was required. If possible, please provide the number of times maintenance was conducted on WH2 in the last 10 years, on a per annum basis, and the cost of this maintenance work. For example, how many times did YEC rewind the generator?

(b) Please indicate if any unplanned outages have occurred with WH2. If confirmed, please provide the number and duration of these outages in the last 10 years, on a per annum basis, and the costs incurred due to these outages.

(c) Please provide the external studies showing that unit efficiency would be improved with a new runner of modern design, and explain the improvements found with this design. Additionally, please indicate which consultant carried out these studies, and provide details on the selection process of the contractor and how costs were awarded.

(d) Please provide Hatch's economic assessment of the various uprate options at the Whitehorse Rapids Generating Station, and provide the costs of all the uprate options explored in this assessment.

(e) Please provide further detail on YEC's choice of uprating WH2 over WH1. For example, what process was carried out to determine that WH2 required uprating over WH1? Did YEC conduct technical meetings with its staff or carry out an assessment comparing issues between both assets?

(f) Please provide an update on the work currently completed for this project. Is YEC currently on schedule with this project?

YUB-YEC-1-58

Reference: **Application, Tab 5.2.1.10, pages 5-19**

Issue: **WH4 Uprate – Servomotor Replacement Project**

Quotes: "The project involves detailed design, procurement and installation of two new Servomotors for Whitehorse Hydro Unit 4 (WH4) wicket gate operation. Implementation will increase the output of the WH4 unit by allowing full range of operation of the wicket gates; this enhancement adds additional hydraulic generation of 0.9 GWh/year."

"Contracts with [ANDRITZ Hydro] (OEM), L&S Electric (to review documentation and develop a governor commissioning plan) and Hatch (owners engineer) have been finalized. Procurement has not yet been undertaken for testing services and installation of a lifting device."

"Final design is nearing completion and manufacturing is expected to commence in Q3 2020 … Delivery of the Servos is expected by January 2021. Contractor mobilization and installation, testing and commissioning is expected to occur in June 2021. The project is expected to be in service in June 2021."

Request:

(a) Please indicate the year in which the existing servomotors were installed and the expected service life at the time of installation.

(b) Please explain why YEC decided to pursue this project. For example, were there reliability issues with the existing servomotors? Did the existing servomotors cause reliability issues with WH4? If outages were experienced at WH4 due to the servomotors, please provide the number and duration of outages in the last 10 years, on a per annum basis, and the costs incurred due to these outages.

(c) If there were reliability issues with the servomotors, please explain how often YEC carried out tests in the past to assess reliability of the servomotors. If possible, please provide the number of times maintenance was conducted on the servomotors in the last 10 years, on a per annum basis, and the cost of this maintenance work.

(d) Please explain how the enhancement proposed in this project adds additional hydraulic generation.

(e) Please provide details on the selection process of contractors (specifically ANDRITIZ Hydro, L&S Electric and Hatch) for this project, including how contracts were awarded for this project.

(f) Please provide an update on the work currently completed for this project. Is YEC currently on schedule with this project? For example, has final design and manufacturing been completed and is the project still expected to be in service in June 2021?

YUB-YEC-1-59

Reference: **Application, Tab 5.3.1, pages 5-21 to 5-25 and 5-35 to 5-42.**

Issue: **Costs for Deferred Projects Greater Than $1 Million**

Preamble: In this section of its application, YEC outlined the costs for the Aishihik Generating Station Three-Year Licence Renewal and Demand Side Management projects, which were deferred projects incurring costs greater than $1 million. For the Aishihik Generating Station Three Year Licence Renewal Project, YEC indicated that it spent $0.805 million in 2019 and $0.200 million in 2020. For the Demand Side Management Project, YEC indicated that it spent $0.833 million in 2019, forecasted spending $0.375 million in 2020 and forecasted spending $0.894 million in 2021. YEC stated that it reflected these costs in Tables 5.3 to 5.6 in its application, found from pages 5-35 to 5-42. It is not clear how YEC allocated these costs over the previous years and how it plans to allocate these costs in its forecasted years.

Request:

(a) Regarding the Aishihik Generating Station Three-Year Licence Renewal Project, please provide a cost breakdown of the $0.805 million and $0.200 million spent in 2019 and 2020 respectively. More specifically, provide the activities conducted and then the cost amount allocated to each activity.

(b) Regarding the Demand Side Management Project, please provide:

i. a cost breakdown of the $0.833 million spent in 2019, a description the activities conducted and the cost amount allocated to each activity; and

ii. a cost breakdown of forecasted spending on $0.375 million and $0.894 million in 2020 and 2021 respectively, a description of the activities YEC forecasts to conduct and the cost amount allocated to each activity.

YUB-YEC-1-60

Reference: Application, Tab 5.3.1.2, page 5-23, line 14; Our Clean Future: A Yukon Strategy for Climate Change, Energy and a Green Economy, page 45

Issue: **Demand Side Management (DSM)**

Quotes: From page 5-23 of the Application:

"Since that determination the Yukon Government has put in place a Climate Change policy initiative called "Our Clean Future: A Yukon Strategy for Climate Change, Energy and a Green Economy" which emphasizes the importance of DSM as a valuable resource to reduce the Yukon's energy and capacity requirements. As part of that policy the government fully expects YEC to pursue a cost-effective DSM program." (footnote removed)

From page 45 of Our Clean Future: A Yukon Strategy for Climate Change, Energy and a Green Economy:

"ACTIONS
H26. Provide direction to the Yukon Utilities Board in 2020 to allow Yukon's public utilities to partner with the Government of Yukon to pursue cost-effective demand-side management measures (YDC)

H27. Establish a partnership between the Government of Yukon, YEC Corporation and ATCO Electric Yukon by 2021 that will collaborate on the delivery of energy and capacity demand-side management programs (EMR & YEC)"

Request:

(a) Please provide copies of any written communication from the Yukon Government directing YEC to deliver DSM programs.

(b) Please provide references to any act, regulation or order in council since the Board issued Order 2018-10 directing YEC to deliver DSM programs or directing the Board to allow YEC to recover the costs of such programs through its rates.

YUB-YEC-1-61

Reference: **Application, Tab 5.3.1.2, page 5-24, line 18**

Issue: **Pilot DSM Program**

Quotes: "YEC faces a capacity shortage under the single contingency (N-1) planning criterion. With this capacity planning context, and mindful of the policy context outlined in the Yukon Government's Climate change strategy, YEC has pursued a pilot program testing internet connected, wifi enabled demand response technology designed to control residential baseboard and hot water heating during winter peak periods to help reduce system peak and reduce reliance on thermal generation such as diesel or natural gas.

The objective of the program is to: evaluate the technical feasibility of the demand response technology; model and test the peak shifting effect of the pilot; test the reliability of the peak shifting effects of the pilot; and evaluate customer acceptance of the demand response events.

The project is managed by YEC with funding support from Atco Electric Yukon (AEY), Yukon Development Corporation (YDC) and Natural Resources Canada (NRCan). Project expenditures of $0.809 million ($0.434 million in 2019 and $0.375 million in 2020) are to be included in rate base, offset by contributions of $0.365 million in 2019, are amortized over 10 years."

Request:

(a) Please provide a detailed description of the components of this pilot project. For example, in which areas of Yukon is the project being conducted, and how many customers are included in the pilot? Please provide the forecasted and actual costs to date allocated to each component.

(b) Please provide details of the funding amounts provided by AEY, YDC and NRCan, including a description of how YEC and AEY determined the relative amounts to be contributed by each party.

(c) Please provide the information and assumptions on which this pilot project is based, including but not limited to:

i. quantity of and electrical demand of the installed water heaters;

ii. percentage of water heaters that could be taking part in the final project;

iii. estimated demand of the water heaters during peak demand periods;

iv. average lifespan of water heaters being used in the pilot program compared to the typical household water heater;

v. the cost of the equipment, including installation cost, included in the pilot;

vi. description of any incentives offered to the participating ratepayers;

vii. potential security concerns for participants ' wireless internet systems and measures being implemented to address those concerns; and

viii. estimated frequency and duration of disconnections or service calls resulting from the new equipment and YEC's proposed measures to manage such events.

(d) Please provide any analysis carried out by YEC or its program partners comparing the proposed program to direct incentives paid to customers who take their own steps to reduce demand or shift peak demand. If no such analysis has been done, please explain why.

(e) Please provide the results of analysis performed by YEC or its program partners examining the costs and benefits of the project relative to any alternatives considered.

YUB-YEC-1-62

Reference: **Application, Tab 5.3.1.2, page 5-25, line 9**

Issue: **LED Streetlight Retrofit Program**

Quote: "In addition to the program's specifically developed in response to the Yukon Governments Climate Change initiative, the Board also noted in Order 2018-10 (Para 481) that it "considers that retrofitting streetlights at end of life with LED lights were prudent expenditures. Any LED installations that are not end-of-life conversions must not be included in YEC's rate base." The 2017/18 GRA outlined the basis for the LED Streetlight Replacement program noting that YEC decided to move forward with the retrofit of streetlight assets with LEDs. Streetlights in downtown Dawson and Mayo were retrofit in 2016 with plans to retrofit the remaining streetlights in Faro, Mendenhall and Champagne in 2018. As illustrated in Table 5.3, $0.273 million was added to rate base in 2018." (footnote removed)

Request:

(a) Please confirm that all costs added to rate base in 2018 for LED streetlight retrofits were for retrofitting streetlights that were at end of life. If not confirmed, please explain.

(b) If part (a) is not confirmed, please separate the $0.273 million into amounts for end-of-life retrofitting and retrofitting of streetlights that were not at end of life.

(c) Please confirm that YEC has not added any amounts to rate base for streetlight retrofitting in 2019 and 2020 and does not propose to do so in 2021. If not confirmed, please explain.

(d) Are there any remaining streetlights that have not been retrofitted to LEDs? If so, please estimate the percentage of streetlights that have not been retrofitted, the cost of retrofitting the remaining streetlights, and outline YEC's planned timeline for doing so.

YUB-YEC-1-63

Reference: **Application, Tab 5.3.2, page 5-26, line 15; Appendix A to Board Order 2018-10: Reasons for Decision, paragraphs 515 and 516**

Issue: **Deferred Costs for Projects Between $100,000 and $1 Million**

Quotes: From Application page 5-26:

"Mayo and Aishihik Hydro Climate Change Study ($0.638 million in 2020 for expenditures from 2017 to 2020)…"

"Transmission Access Road Program Study ($0.133 million in 2020 and $0.200 million in 2021)…"

From Appendix A to Board Order 2018-10:

"515. For the Mayo and Aishihik climate change study, YEC spent $121,530 prior to 2017 and forecast $160,000 for each of 2017 and 2018. This project will deliver research and modelling to better understand how climate change will impact the Aishihik and Mayo drainages to help inform inputs to YEC's generation model…

516. In response to a UCG IR, YEC indicated that the 35 years of data inflows into YECSIM reflect what was recorded over the 35 years, including any climate change impacts relevant to those years. Given YEC's statement that its YECSIM model includes climate change impacts, the Board finds that YEC has **not adequately demonstrated that it is necessary to engage in a separate study specifically on climate change impacts**. Accordingly, the Board finds there is no justification for this project and directs YEC to remove these costs from its revenue requirement for each of 2017 and 2018 and not recover the 2016 costs. The Board directs YEC further to reflect this finding in its compliance filing." (emphasis added; footnotes removed)

Request:

(a) Please justify the costs for the Mayo and Aishihik Hydro Climate Change Study in this application, given that the Board directed YEC to remove costs associated with studies on climate change impact in the previous application. Why should the $0.638 million incurred for this study be approved and put into rate base?

(b) Please provide a breakdown of the $0.333 million incurred for the Transmission Access Road Program Study. More specifically, please provide the activities conducted by YEC and the cost allocated to each activity.

YUB-YEC-1-64

Reference: **Application, Tab 5.4.1.1, page 5-28, line 11 and page 5-30, line 10**

Issue: **Enterprise Asset Management (EAM) System Purchase and Implementation Project**

Quotes: "YEC is undertaking a multi-year process to develop and implement a formal Physical Asset Management Managed System (PAMMS) that will align its practices with the ISO 55000 standard for physical asset management (see Appendix 5.1 for further details on the Asset Management Framework). A key part of the PAMMS initiative is the selection and implementation of an Enterprise Asset Management (EAM) solution suited to the needs of the company. (footnote removed)

The existing Computerized Maintenance Management System (CMMS) does not meet YEC's current or future asset management needs. An EAM system is an enterprise level software application that enables an organization – particularly an asset intensive organization – to manage and optimize its assets throughout the entire asset lifecycle including asset needs identification, asset investment planning and prioritization, advanced asset maintenance management and asset performance tracking." (page 5-28)

"Total costs to complete the project are currently estimated at $4.938 million. The project is expected to be fully implemented in early 2021." (page 5-30)

Request:

(a) Please provide a business case for the enterprise asset management system project, including the cost benefit analysis that could be used for a performance measure.

(b) Please explain why the existing Computerized Maintenance Management System does not meet YEC's current or future asset management needs.

(c) Please provide a cost breakdown of the $4.938 million estimated, specifically the activity that will be completed and the cost amount allocated to that activity.

(d) Please explain if any other alternatives were explored by YEC in meeting its asset management needs and, if so, provide the costs of those alternatives.

(e) Please provide an update on the work currently completed for this project. Is YEC currently on schedule with this project?

YUB-YEC-1-65

Reference: **Application, Appendices 5.1 to 5.6**
Issue: **Forecasted Dates Provided for Projects and Studies in These Appendices**
Preamble: In the descriptions for the projects and studies, YEC provided the forecasted completion date. For example, YEC indicated that the forecasted completion date for the Dawson Voltage Conversion was 2022.

Request:
For each project or study mentioned in Appendices 5.1 to 5.6, please indicate whether it is still viable for completion on the forecasted date. If not, please explain the reasons for delays on projects.

YUB-YEC-1-66

Reference: **Application, Appendix 5.1-1, page 5.1-2**
Issue: **Dawson Voltage Conversion Project**
Quotes: "Dawson City's two 4.16 kV distribution feeders have reached their practical operating limits, resulting in frequent power outages, constant voltage flicker, and longer fault clearing times. Teshmont Consultants LP conducted a site visit to assess the entire 4.16 kV distribution system to identify protection issues, potential voltage levels, transformer utilization and power flow. The primary issues facing the Dawson distribution system were noted as follows …"

"Teshmont recommended converting the operating voltage of the Dawson City distribution system from 4.16 kV to 12.47 kV in a single stage. Increasing the voltage immediately improves the capacity on the existing conductors, reduces fault current at the primary, reduces voltage drops and decreases energy losses."

Request:
(a) Please indicate the year in which these two feeders were installed and the expected service life of the feeders at the time installation.

(b) Please explain how often YEC carried out tests on these feeders in the past to assess their reliability and how often maintenance work was required. If possible, please provide the number of times maintenance was conducted on these feeders in the last 10 years, on a per annum basis, and the cost of this maintenance work.

(c) Please provide the number and duration of outages resulting from the two Dawson City distribution feeders for each of the last 10 years, on a per annum basis, and the costs incurred due to these outages.

(d) Please provide the assessments conducted by Teshmont Consultants LP. Were any other alternatives explored for mitigating the issues on the Dawson distribution system?

YUB-YEC-1-67
Reference: **Application, Appendix 5.1, page 5.1-3**
Issue: **MH0 (Mayo A) Generation Station Slope Stability Project**

Request:
Please provide a cost breakdown of the $1,500,000 cost for this project. More specifically, identify the activities YEC forecasts to conduct and the cost amount allocated to those activities.

YUB-YEC-1-68
Reference: **Application, Appendix 5.1, page 5.1-3**
Issue: **Replacement of Mayo A Surge Chamber Project**
Quote: "The Mayo A surge chamber is at end life and must be replaced before there is a catastrophic failure. An engineering study is being undertaken in 2021 to determine solutions and further work is forecast in 2022."

Request:
(a) Please indicate the year in which the Mayo A surge chamber was installed and the expected service life at the time of installation.

(b) Please explain how often YEC carried out tests on this chamber in the past to assess its reliability and how often maintenance work was required. If possible, please provide the number of times maintenance was conducted on this chamber in the last 10 years, on a per annum basis, and the cost of this maintenance work.

(c) Please describe the nature of the catastrophic failure that could occur in the Mayo A surge chamber.

(d) Please provide details on the engineering study that will be conducted on the chamber.

YUB-YEC-1-69
Reference: **Application, Appendix 5.1, page 5.1-4**
Issue: **Stop Log Crane WH Main Spill Way Project**
Quote: "The stop log crane at the Whitehorse hydro main spill way is critical infrastructure that is required for installing stop logs, including in emergency situations. Furthermore, cranes are subject to annual inspection by regulation. The stop log crane is aging and is experiencing a number of issues. Several structural fasteners are showing signs of rusting and possible fatigue … Due to the age and design of this unit, any parts required to facilitate this repair will have to be independently sourced and/or manufactured."

Request:
(a) Please indicate the year in which the stop log crane was installed and the expected service life at the time of installation.

(b) Please clearly describe what work will be done, as part of this project in 2021, that is covered by the $200,000 cost. Are further costs, beyond the $200,000 in 2021, anticipated in the near future for the stop log crane?

YUB-YEC-1-70

Reference: **Application, Appendix 5.1, page 5.1-4**
Issue: **Asset Management Framework Project**
Quote: "YEC is proceeding in a staged manner. Asset Management Framework costs to the end of 2019 were $2.064 million, with $1.560 million of forecast expenditures in 2020 and $1.196 million of forecast expenditures in 2021. Project costs will remain in WIP at the end of 2021 as activities for the 5-year program remain ongoing in 2022. Costs for EAM system purchase and implementation are addressed separately (see Section 5.4.1)."

Request:

(a) Please confirm that this is a separate project from and in addition to the Enterprise Asset Management (EAM) in Section 5.4.1.1 in the Application. (IR 66) Why are they separated into two projects?

(b) Please explain why it costs $4.82 million to develop a framework for managing capital assets.

(c) Please provide a cost breakdown for this project. More specifically, provide the activities YEC has included in its forecasts and the cost amount allocated to those activities.

(d) Please provide the results of analysis performed by YEC examining the costs and benefits of this project, including a comparison to any alternatives considered by YEC for this project.

YUB-YEC-1-71

Reference: **Application, Appendix 5.1-2, page 5.1-5; Appendix A to Board Order 2018-10: Reasons for Decision, paragraph 463**
Issue: **Battery Energy Storage System Project**
Quotes: From Appendix 5.1-2, page 5.1-5:

"In Order 2018-10 regarding the 2017/18 GRA the Board noted its view that the estimated costs for 4 MW of battery storage did not compare favourably on a dollar per MW basis with the LNG third engine or the 20 MW thermal plant. Further, concern was noted that the technology was not tested, and shown demonstrated benefits, in northern climates. Given the costs and unproven nature of the technology in a northern environment, the Board determined the project was not viable and absent NRCan funding it was risky to undertake the project." (footnote removed)

From Appendix A to Board Order 2018-10:

"Further, the Board is of the view that, at this time, the technology used for battery storage has not been tested in northern climates such as Yukon and has not been shown to provide the benefits outlined by YEC in such jurisdictions. The Board finds that, given the costs and unproven nature of the technology in a northern environment, the project is not viable. If YEC did not have funding from NRCan, it was risky to undertake the project, considering that even the initial costs in the test years are forecast at over

> $9 million dollars. For these reasons, the Board finds that expenditures on such a project are not warranted. As a result, the Board denies the inclusion of costs associated with the battery energy storage project in the revenue requirement for the test years and directs YEC to reflect this finding in its compliance filing."

Request:

(a) Please provide the results of analysis performed by YEC examining the costs and benefits of the project relative to any alternatives considered by YEC.

(b) Please identify how YEC has addressed the Board's concerns in Board Order 2018-10 with respect to the project's viability, benefits and expenditures.

(c) If this project is approved by the Government of Yukon in 2021, please provide the current estimate of when YEC intends to add costs related to this project to its proposed rate base, e.g. in a future GRA.

YUB-YEC-1-72

Reference: **Application, Appendix 5.1, page 5.1-6**
Issue: **Pumped Storage**
Quote: "Federal funding was identified as a critical requirement for this project to keep the project affordable for customers and to minimize risks."

Request:

(a) Does YEC have an estimate of the total cost for this project, if completed? If so, please provide a cost breakdown of the costs for this project. More specifically, provide the activities YEC forecasts to conduct and the cost amount allocated to those activities. If not, please explain why not.

(b) Has YEC identified potential federal funding for this project? If so, please provide an overview of the funding YEC hopes to obtain and the status of efforts to do so.

(c) Please provide the results of analysis performed by YEC examining the costs and benefits of the project relative to any alternatives considered by YEC.

(d) Please comment on how an isolated electrical system running out of generation capacity can benefit over the short, medium and long term from energy storage within the isolated system.

(e) Given the inefficiencies of storage systems and the current operating frequencies and duration for thermal generation in the Yukon, please comment on whether it is reasonable to use thermal generation to charge a storage facility.

YUB-YEC-1-73

Reference: **Application, Appendix 5.1, page 5.1-7**
Issue: **Southern Lakes Transmission Line and Whitehorse Interconnection Projects**

Request:
Does YEC have an estimate of the total costs for these two projects, if completed? If so, please provide cost breakdowns for the projects. More specifically, provide the activities YEC forecasts to conduct and the cost amount allocated to those activities. If not, please explain why not.

YUB-YEC-1-74

Reference: **Application, Appendix 5.2, page 5.2-1**
Issue: **Dam Safety Program Project**
Quote: "A full dam safety review (DSR) is performed every 5 years by an external consultant as recommended by the Canadian Dam Association (CDA) … Spending in 2021 is required to address 2020 DSR outcomes and priorities identified for 2021. Some of the high priority items that will be addressed include:

- Wareham dam spillway design
- Warning and danger signage around the six dams
- Public safety around Marsh Lake"

Request:
(a) Please confirm that the $300,000 cost for 2021 is for the work included in the bullet list. If confirmed, please break down the $300,000 cost into the three projects.

(b) Please explain what "public safety around Marsh Lake" entails.

(c) Is the cost of performing the dam safety review included in YEC's revenue requirement? If so, please provide a reference to where that is described in YEC's Application.

(d) Was a competitive process used to retain an external consultant to perform the review? If not, why not? If so, please describe the process, including the number of quotes or proposals received and details of the successful vendor.

YUB-YEC-1-75

Reference: **Application, Appendix 5.2, page 5.2-2**
Issue: **Dam Safety Recommendations 2017-18**
Quote: "2019 spending included required maintenance around the Marsh Lake control structure, and replacement of Whitehorse piezometers; while planned 2020 activities include replacement of the Mayo Lake Dam wood planking, Wareham Dam seismic upgrades, and the implementation of a public safety plan at the Marsh Lake control structure."

Request:

(a) Please provide a cost breakdown for 2019 and 2020 spending by the work items listed in the quote above.

(b) Please explain why each of the work items listed in the quote above were required to be done in 2019 and 2020.

(c) Was the work scheduled to be done in 2020 completed? If not, please explain why and provide an update on the status of the work.

YUB-YEC-1-76

Reference: **Application, Appendix 5.2, page 5.2-2**

Issue: **P126 LNG Boil-Off Gas Heat Exchanger Project**

Quote: "Prior to decommissioning of the Mirrlees diesel generators, LNG boil off gas was piped to P126 and burned in the P126 plant boiler and/or dissipated through the WD1 jacket water heat exchanger. With retirement and removal of the three Mirrlees gensets at the Whitehorse Diesel Plant (P126) there was a requirement to replace this heat dissipation function and to design, supply and install a new heat exchanger at the plant to dissipate extra heat from the combustion of LNG boil off gas. Work related to the installation of the heat exchanger included hiring an owners engineer to prepare design, drawings and specifications for the new heat exchanger, piping, a new pump with VFD, and a temperature sensing device, and provide mechanical and electrical drawings and technical specifications for equipment and piping installation for tendering the construction work."

Preamble: The Board requires additional information regarding how removal of the Mirrlees generators necessitates a new heat dissipation function and heat exchanger.

Request:

(a) Were the P126 plant boiler and WD1 jacket water heat exchanger removed or decommissioned when the diesel generators were decommissioned?

(b) Please explain why removal of the diesel generators necessitates installation of a new heat exchanger.

YUB-YEC-1-77

Reference: **Application, Appendix 5.2, page 5.2-2**

Issue: **Wareham Gate Heating Project**

Quote: "The Wareham Gate Heating project replaced an old and ineffective heating system on both Wareham Spillway Gates. The new system is designed to keep both spillway gates operational through the winter. Passing flows during outages and times of high inflows is a critical function of the spillway."

Request:

(a) Please indicate the year in which the original heating system was installed and the expected service life at the time of installation.

(b) Please describe the frequency and duration of periods during which the Wareham spillway gates were out of operation during the winter over the last ten years, on a per annum basis.

(c) Please describe the effect of those periods on available capacity.

YUB-YEC-1-78

Reference: **Application, Appendix 5.2, page 5.2-4**
Issue: **WH4 Ventilation**
Quote: "The WH4 plant is overheating during the summer. Given that YEC is adding additional capacity to the WH4 hydro unit with new servo motors in 2021, removing the restriction placed on output by the overheating issue will enable the extra capacity to be used reliably throughout the year."

Request:

(a) Please describe the work to be done as part of this project and break down the $750,000 cost to the work items comprising this project. In your response, provide any assumptions on how the $750,000 cost was derived.

(b) Please describe the frequency and duration of outages at WH4 resulting from overheating over the last ten years, on a per annum basis.

YUB-YEC-1-79

Reference: **Application, Appendix 5.2, page 5.2-7**
Issue: **L355 Voltage Regulator Project**
Quote: "Atco Electric Yukon (AEY) has reported low voltage levels (below CSA standards) at the AEY Haines Junction substation, which is supplied from Aishihik via distribution line L355. The project identified the voltage profile of L355, determined the appropriate location and settings of voltage regulators, and completed all installation and commissioning work.

Request:

(a) Please explain the frequency at which AEY is experiencing low voltage levels.

(b) Please provide the voltage levels prescribed in CSA standards and the voltage levels experienced at the Haines Junction substation.

YUB-YEC-1-80

Reference: **Application, Appendix 5.2, page 5.2-9, footnotes**
Issue: **Building Upgrades**
Quote: "[7]There are many exterior works, including roofing, heat trace, metal or wood cladding, structural or building envelope work or windows and doors. A variety of work is required to be done on staff housing, offices and plants.
[8] Numerous Heating Ventilation and Air Conditioning (HVAC) issues have been identified. The intent is to group the HVAC work requirements into annual tenders seeking contractor to do works within the communities required.
[9] Flooring issues identified relate to removal of warn carpeting or sealing of foundation flooring to alleviate any potential radon into the workplace.
[10] A majority of electrical panels are at end of life or currently overloaded and need to be replaced.
[11] A stepdown transformer is required for the Aishihik office plant as the existing one has exceeded its life expectancy."

Request:

(a) Please provide the costs for the work items listed in footnote 7 and explain why each is necessary.

(b) Please describe the issues and problems with the existing HVAC systems and equipment and the proposed remedies and forecast cost of those remedies.

(c) Please provide and comment on the results of any testing done for radon in YEC's buildings and the forecast cost of replacing flooring in those buildings.

(d) Are the electrical panels currently experiencing problems or issues leading to safety concerns or excessive maintenance costs? Please explain.

(e) Please provide the estimated cost of replacing the panels.

(f) Is the existing stepdown transformer currently experiencing problems or issues leading to safety concerns or excessive maintenance costs? Please explain.

(g) Please provide the estimated cost of replacing the stepdown transformer.

YUB-YEC-1-81

Reference: **Application, Appendix 5.2, page 5.2-9**
Issue: **Compact Digger Truck**
Quote: "The purchase of a 4 to 5 ton chassis compact digger truck for use in Dawson will substantially decrease risks for workers and ensure greater efficiency in day to day work; including providing improvements in outage response times. Servicemen currently use an attachable bucket that goes on the side of the digger boom for many types of work from street light maintenance, service work, trouble call response, and new construction. The bucket is heavy and difficult to attach/detach. In a trouble call scenario this can also be time consuming and increase trouble call response time leading to frustration and potential unsafe working conditions."

Request:

(a) On average, how many times per year is the bucket attached to and removed from the digger boom, how many service personnel does it typically take to attach the bucket, and how long does it typically take to do so?

(b) Please use the answers to part (a) to estimate the annual incremental cost of not purchasing a new digger truck.

(c) In the past five years, have any injuries or safety concerns been reported by service personnel as a result of having to attach the bucket? If so, please explain.

(d) Please provide the models and website links (with purchase prices) for the models of compact digger trucks being considered. Please also include YEC's comments on which model(s) are preferable and why.

YUB-YEC-1-82

Reference: **Application, Appendix 5.2, page 5.2-9**
Issue: **Crane Replacement/Refurbishment**
Quote: "During an annual crane inspection, three YEC cranes (Aishihik service building, P127 powerhouse, & P127 stop log hoist) were identified as needing significant structural, electrical, and mechanical repairs in order remain in acceptable working condition. 2020 spending will provide for a detailed assessment of each crane to determine an engineered plan for replacement or refurbishment as required. Actual construction activities are planned for 2021."

Request:

(a) Are the cranes being repaired or replaced with mobile or fixed cranes? If they are mobile cranes, how many mobile cranes does YEC have available at the specified locations? Please comment on the possibility of other cranes being used in place of the cranes to be repaired or replaced.

(b) Please explain what is entailed in the assessments of the cranes, who will carry out the assessments and why the assessment of three cranes will cost $165,000.

(c) Please confirm that the $400,000 forecast cost for 2021 is the estimated cost to repair or replace all three cranes. If not confirmed, please explain.

(d) What is the estimated full replacement cost of the three cranes?

(e) When did the three cranes enter service, and what is their expected service life?

YUB-YEC-1-83

Reference: **Application, Appendix 5.2, page 5.2-9**
Issue: **Mayo Earthworks Project**
Quote: "A number of issues at and around the Mayo Hydro facilities have been identified. These include slope instability and erosion issues near access roads (Mayo A, Mayo B, and Wareham dam), both powerhouse buildings, surge tank, and both substations. During 2019 a complete site inventory of civil issues was undertaken to identify and prioritize issues. The inspection highlighted several required projects to improve roads, make culvert installations and secure embankments. 2020 spending developed a detailed work plan for identified issues including a geotechnical assessment, topographic survey, detailed engineering design (including drawings and specifications), construction methodology, and project scope, schedule & budget development."

Request:

(a) Please confirm that 2020 spending was only on development of the work plan for the Mayo earthworks project. If not confirmed, please explain.

(b) When does YEC propose to undertake the works required to remediate the identified issues and what is the estimated cost of those works?

(c) Please describe the safety issues and or threats to infrastructure caused by the issues identified.

YUB-YEC-1-84

Reference: **Application, Appendix 5.2, page 5.2-10**
Issue: **New Mobile Office Unit – IT**
Quote: "The existing IT trailer houses five offices and a closed storage space. It is aging and requires additional O&M support each year. The project involves replacement of the aging, undersized IT trailer with a larger unit able to accommodate eight office spaces and storage. Additional office spacing would allow for staff expansion as a less costly solution than building onto the main building."

Request:

(a) What was the original cost of the existing IT trailer, when did it enter service and what was its expected service life?

(b) How many YEC personnel currently use the IT trailer, and what is the typical number of personnel occupying the trailer at any time?

(c) What is the estimated annual O&M cost associated with the IT trailer, and what is the estimated annual O&M if a new trailer is purchased?

YUB-YEC-1-85

Reference: **Application, Appendix 5.2, page 5.2-10**
Issue: **Vehicle Purchases**
Quote: "Fleet vehicles were historically replaced at regular intervals based simply on age and mileage. YEC has recently adopted a replacement policy that considers more comprehensive criteria when assessing specific vehicles to be replaced each year. The forecast amounts for 2019 include the purchase of pickup trucks with service bodies, including a 2 tonne mechanical operator's vehicle (the current 1 tonne vehicles did not have sufficient chassis to do the work safely), and forecast 2020 acquisitions focused on vehicles based in Dawson and Mayo due to the higher cost of local repair services. 2021 costs are to replace aging/ high mileage vehicles that are incurring greater O&M costs to maintain."

Request:

(a) For each of the last five years (actual) and 2021 (forecast), please provide the number of vehicles replaced and the average age and average mileage of those vehicles.

(b) Please provide YEC's estimate of the average annual maintenance cost of vehicles in its fleet based on the number of years the vehicle has been in service, beginning at one year and ending with the age of the oldest vehicle replaced in the last five years.

YUB-YEC-1-86

Reference: **Application, Appendix 5.2, page 5.2-10**
Issue: **Water Improvement Upgrades**
Quote: "The cooling water and potable water systems in the YEC main corporate office have experienced pre-mature piping failure and select cooling coil leaks for at least the past 10 years. An external engineering firm was engaged to assess the current systems and provide recommendations to address the issues. The project will implement those recommendations including the installation of a particulate filter, a VFD drive for the existing pump, a heat exchanger, new cooling water piping and valves, and fan coil drip pans with leak detection."

Request:

What was the cause of the problems experienced with the office water systems? Please describe how the proposed work will prevent similar problems in the future.

YUB-YEC-1-87

Reference: **Application, Table 5.2-1, page 5-33**
Issue: **Other Projects Under $100K**

Request:

Please provide more details on the "Other projects under $100K" line item in Table 5.2.1. What were these projects associated with? Why were they required?

YUB-YEC-1-88

Reference: **Application, Appendix 5.2, page 5.2-11**
Issue: **FD7 Overhaul Project**
Quote: "Faro Diesel #7 (FD7) is located at the Faro Diesel Plant and uses as 12-cylinder Caterpillar Model 3612 diesel engine as its prime mover (vintage 1992). The unit was used when purchased by YEC from a mining operation; however, the complete service history for the unit is not known (YEC has registered 28,624 operating hours). A conditional assessment for the engine was undertaken in 2016 by MPR Associates and a follow-up inspection was undertaken by Finning in May 2016. The inspection focused on items identified in the MPR report and included a more fulsome mechanical inspection that included: removal, measurement and inspection of piston/ rings; inspection of camshaft segments and filter assemblies; measurement of heads and valves and connect rod bearings. One cylinder lining was found cracked and replaced during the inspection. Due to the significant wear found on the inspected parts, it was recommended that a complete overhaul of the unit be undertaken."

Request:

(a) Please indicate the number of hours FD7 was in operation for the last 10 years.

(b) If the overhaul is completed as proposed, does YEC expect the annual operating hours for the unit to increase, decrease or stay the same? Please explain.

(c) What is the estimated purchase and installation price to completely replace FD7?

(d) Were any alternatives to this project considered? If not, please explain why not. If so, please provide details of the results of this consideration.

(e) Please provide a breakdown of the work proposed to be done on FD7 and the estimated cost of each component.

YUB-YEC-1-89

Reference: **Application, Appendix 5.1, page 5.1-1 and Appendix 5.3, page 5.3-1**
Issue: **Projects Not Impacting Rate Base and Deferred Projects**
Quote: "Appendix 5.1 provides project summaries for capital projects with spending over the period from 2019 to 2021 exceeding $1 million that remain in WIP at the end of 2021 (and therefore do not affect the 2021 GRA revenue requirement)."

"Deferred expenditure test year spending on major projects (i.e., expenditures over $1 million) retained in WIP is focused on projects required to address sustaining capital requirements (i.e., required to replace, repair or enhance/ improve components of the existing system to ensure continued reliability, safety and environmental or regulatory compliance), investments to ensure sufficient dependable capacity for the integrated grid, and continued planning expenditures to meet other potential future generation and transmission requirements."

Request:

(a) Please explain why there are two different appendixes (5.1 and 5.3) for projects held in WIP and what the purpose of each of those appendixes is.

(b) Please confirm that no costs for projects listed in Appendix 5.1 and Appendix 5.3 have been added to YEC's rate base or revenue requirement for 2021. If not confirmed, please explain and provide a breakdown of all costs for these projects that YEC is proposing to add to rate base.

(c) Please explain the rational for YEC's "Not Impacting Rate Base" and "Deferred Projects" categories. At some point, will YEC put the costs of projects currently listed as "Not Impacting Rate Base" into the rate base?

(d) Please provide YEC's capitalization policy.

YUB-YEC-1-90

Reference:	**Application, Appendix 5.3, page 5.3-2**
Issue:	**Aishihik Generating Station (AGS) Long-Term Water Use Licence Renewal Project**
Quote:	"The planned long term AGS Water Use Licence renewal project and related costs were initially reviewed as part of the 2017/18 GRA. At that time, it was noted that the total forecast budget for the project was $3.569 million spread over five years (2015-2019) … The deferred costs forecast in the Application include spending in WIP increasing from $4.957 million at the end of 2018 to $7.918 million by the end of 2021. The project is forecast to be complete by the end of 2022."

Request:

(a) Please break down the $7.918 million cost for this project into the various components of the project and provide a description of why each component is necessary for the project to proceed.

(b) Please explain why the total cost of this project has increased from $3.569 million in the 2017-18 GRA to $7.918 million in the current application.

(c) Please provide a description of each new cost item and each cost item that has increased since the previous GRA, along with a description of why the new cost item or the increased cost is necessary.

(d) Please include an explanation of why YEC's initial cost estimate was less than half of the current estimate and the measures YEC has implemented or plans to implement to improve its ability to forecast the costs of projects like this.

(e) Please describe the actions YEC has taken throughout the duration of this project and the actions YEC plans to implement moving forward to control and minimize the costs of this project.

YUB-YEC-1-91

Reference: **Application, Appendix 5.3, page 5.3-3**
Issue: **Whitehorse Generating Station Water Use Licence Renewal Project**
Quote: "The existing water use licence for the Whitehorse Rapids Generating Station (WRGS) expires at end of 2025 and must be renewed in order to ensure ongoing, lawful operation of the WRGS hydro facilities. This is a multi-year project to renew the existing long-term project authorizations for the WRGS Hydro Plants and associated infrastructure. Project activities include conducting required baseline studies (e.g. environmental, socio-economic, engineering), and undertaking environmental and socio-economic effects assessment, First Nation engagement and consultation, other stakeholder engagement as required to submit a YESAA project proposal to the Whitehorse Designated Office. Project activities will also include completing the YESAA review process, the water use renewal process with the Yukon Water Board, and Fisheries Act Authorization (DFO) regulatory process."

Request:

(a) Is the $260,000 cost for 2021 the full expected cost of this project? If not, please provide the full expected cost of this project along with a breakdown of that cost into individual cost components. Please also include a description of why each cost component is a necessary part of the project.

(b) What measures is YEC undertaking to ensure that the cost of this project does not increase by a similar magnitude as the costs for the Aishihik licence renewal?

(c) What efforts have been made to streamline planning work for the Southern Lakes Enhanced Storage to avoid duplication with this water licence renewal project?

YUB-YEC-1-92

Reference: **Application, Appendix 5.3, page 5.3-3 to 5.3-4**
Issue: **Diesel Retirement Replacement Project**
Quote: "The 2016 Resource Plan identified a dependable capacity shortfall for the Yukon Integrated System under its single contingency (N-1) capacity reliability criterion that approximates 6 MW in 2017, increasing to 10-11 MW by 2019. YEC is required to provide sufficient dependable winter capacity to meet the single contingency capacity reliability criterion, i.e., there is no acceptable "do nothing" option given the need to maintain reliable service and to address an ongoing and growing dependable capacity shortfall.

The 2016 Resource Plan identified a new 20 MW greenfield diesel plant as one of the preferred options for addressing the dependable capacity shortfall gap in a cost effective manner in the near term. The YUB reviewed planning for the project during the 2017/18 GRA, and noted it was not persuaded that the project was the only way to address the predicted capacity shortfall, and that YEC should not proceed with the project without a detailed business case that considers the alternatives to the project.

Following the Board's direction in Order 2018-10, YEC proceeded with the additional work as required to evaluate project alternatives. This included identifying and evaluating a number of options for a new 20 MW thermal plant. In October 2019, it was determined that considering the results of the technical, environmental and socio- economic research, as well as public feedback, YEC would focus potential options to add or replace capacity at existing generation facilities on an incremental basis as diesel engines are retired.

This includes consideration of the following near term activities:

- Installation of 5 MW of thermal capacity at the Whitehorse Diesel Plant (P126);
- Replacement of 5.1 MW of diesel to be retired at the Faro Diesel Plant with a 5 MW diesel unit;
- Retirement of the existing 2.5 MW of diesel capacity in Dawson City with installation of 2.5 MW of diesel capacity at the Callison Substation.

Efforts in 2020 have focused on preliminary engineering and finalizing a procurement strategy, defining vendor contracts and milestones, and updating the overall project schedule.

The deferred costs forecast in the Application assume that the project continues, with spending in WIP increasing from $0.041 million at the end of 2018 to $6.395 million by the end of 2021. Dependable capacity from these projects is expected to be available by winter 2023/24. In the interim, YEC will continue to rent diesel generators each winter to ensure an adequate supply of back-up power in case of an emergency."

Request:

(a) Is the $6.395 million estimate for the end of 2021 the full estimated cost of this project? If not, please provide the full estimated cost.
(b) Please provide a breakdown of the $6.395 million into the various components of this project, including a description of why each component is required.
(c) Please provide the results of the analysis YEC carried out to compare the costs and benefits of the various alternatives considered in response to the Board's finding that it "requires a detailed evaluation of alternatives to this project included in the business case."[2]

[2] Appendix A to Board Order 2018-10, page 89, paragraph 470.

YUB-YEC-1-93

Reference: **Application, Appendix 5.3, page 5.3-4**

Issue: **Southern Lakes Enhanced Storage Project (Marsh Lake Storage Project)**

Quotes: "Forecast MLSEP project costs and actual expenditures were reviewed in detail in the 2012/13 and the 2017/18 GRAs. The 2012/13 GRA, identified the project as a relatively small project, with earliest in-service assumed in 2014 (first full year 2015) at a capital cost (2010$) of $10.5 million, with mitigation design (shoreline erosion and surface water) expected to comprise about one-half of this total cost (actual costs for mitigation were stated in the 2012/13 GRA as an item that at that time could not be known with any certainty). In the 2017/18 GRA, forecast total project costs increased to $15.377 million ($9.795 million forecast for effects assessment; $0.300 million forecast for YESAA assessment and permitting; and $7.127 million forecast for mitigation implementation).

"YEC completed an additional round of engagement in 2019 to confirm the level of support for the project. This included engagement with local residents in the Southern Lakes area, and Yukoners generally; as well as a further round of First Nations engagement to confirm the position of the affected First Nations (Carcross/Tagish First Nation, Kwanlin Dun First Nation and Ta'an Kwach'an Council). Prior to the end of 2020, YEC will make a determination regarding whether to advance the project to the YESAA assessment phase.

The deferred costs forecast in the Application assumes that the project continues, with spending in WIP increasing from $7.319 million at the end of 2018 to $9.379 million by the end of 2021. Potential in service for the Project is 2023."

Request:

(a) Please provide an update on the status of this project including but not limited to the outcome of First Nations and public engagement and YEC's decision on whether to proceed with this project.

(b) If YEC is proceeding with this project, please provide:

i. updated cost forecasts along with detailed explanations for any cost increases relative to the forecast provided in 2017-18;

ii. a detailed work plan for completion of the project, including timing for individual components of the project;

iii. a breakdown of the costs forecast for the various work components comprising the project, including all plans for shoreline erosion and property owner septic upgrades and other mitigations;

iv. steps YEC is taking to prevent cost increases for the project; and

v. results of analysis performed by YEC examining the costs and benefits of the project relative to any alternatives considered by YEC.

YUB-YEC-1-94

Reference: **Application, Appendix 5.3, page 5.3-6**
Issue: **Mayo Lake Storage Enhancement Project**
Quotes: "In 2018, Northwest Hydraulic Consultants (NHC) was retained to provide a technical assessment regarding whether sediment remediation steps in the Mayo Outlet Channel were feasible and cost effective. This assessment determined that removal of a coffer dam remnant in the outlet channel would improve flow in the near term and, through scouring activity, could potentially also remove the sediment from the channel; if required, as a next step, dredging the channel upstream of the coffer dam could improve hydraulic benefit for power generation. YEC has subsequently proceeded with preparing a YESAA assessment for the project (including the two-phase outlet channel work) which is targeted to be filed with the Mayo Designated Office before the end of 2020.

The deferred costs forecast in the Application assume that the project continues, with spending in WIP increasing from $3.373 million at the end of 2018 to $4.621 million by the end of 2021. Provided licencing processes commence in late 2020/early 2021, potential in service of the amended licence would be in 2023. Work to remove the coffer dam remnant would then proceed as a separate project."

Request:
Please provide:

(a) A detailed work plan for completion of the project, including timing for individual components of the project;

(b) A total forecast costs for the project and a breakdown of the costs forecast for the various work components comprising the project;

(c) Steps YEC is taking to prevent cost increases for the project; and

(d) Results of analysis performed by YEC examining the costs and benefits of the project relative to any alternatives considered by YEC.

YUB-YEC-1-95

Reference: **Application, Appendix 5.4, page 5.4-2**
Issue: **IPP Standing Offer Program Implementation**
Quote: "YEC and ATCO Electric Yukon (AEY) are responsible for implementing the Yukon Government's Independent Power Producers (IPP) Policy … The project is to be closed in 2020 with total expenditures of $232,039 to be amortized over five years. The Standing Offer Program (SOP) was developed based on the model used in British Columbia and required development of the following key documents: (1) SOP Program Guide; (2) SOP Program Rules); (3) SOP Application Process; (4) SOP Application Form; (5) Interconnection Standards; and (6) Electricity Purchase Agreement Template."

Request:

(a) Please provide a summary of the legislative requirements, any policy directives or government directives which support the statement "YEC and ATCO Electric Yukon (AEY) are responsible for implementing the Yukon Government's Independent Power Producers (IPP) Policy".

(b) Please explain what YEC means when they say the project will be "closed" in 2020. Does this mean it will be completed, cancelled or put on hold?

(c) Please provide a copy of the documentation for the British Columbia model used by YEC as well as the "key documents" listed in the quote above.

(d) Please provide a breakdown of the project components comprising the $232,039.

YUB-YEC-1-96

Reference: **Application, Appendix 5.4, page 5.4-3**
Issue: **Mt. Sumanik Wind Feasibility Studies**
Quote: "From 2016 to 2017, the project work consisted mostly of data collection and management, as well as evaluating upgrades to the power system for the monitoring equipment which experienced difficulties. In 2018 work was conducted to repair the laser of the Lidar unit as the equipment was malfunctioning… The need for YEC to directly conduct resource wind monitoring and site assessments has since been eliminated due to the high likelihood that future wind resources will be developed by Independent Power Producers. As such, the project was decommissioned in 2020 with total expenditures of $775,581 to be amortized over five years."
Preamble: YEC incurred $694,427 in 2018, $31,155 in 2019 and $50,000 in 2020.

Request:

(a) Please confirm that the cost to repair the laser of the Lidar unit was included in the 2018 costs, provide the exact cost of this repair and provide a breakdown of any other costs incurred in that year.

(b) Please provide a breakdown of the costs for the wind feasibility projects incurred for 2019 and 2020.

(c) Please explain how YEC determined that it was not required to conduct wind monitoring and site assessments. For example, did it engage in meetings with Independent Power Producers who expressed interest in wind development?

YUB-YEC-1-97

Reference: **Application, Appendix 5.4, pages 5.4-3 to 5.4-4 and footnote 1, page 5.4-3**

Issue: **WH2 Uprate Engineering**

Quotes: From pages 5.4-3 to 5.4-4 of the Application:

"See Section 5.2.1.10 for a full description and business case for completing the WH2 Uprate Project before the end of 2021."

From page 5.4-3, footnote 1 of the Application:

"[1] By end of 2021 WH2 Uprate Engineering costs will be transferred to Property, Plant and Equipment and added to WH2 Uprate total cost [amortized over 72 years starting in 2022]."

Request:

(a) Please explain why costs for the WH2 Uprating Engineering study are not included in the costs for the WH2 Uprate Project, which is classified as a Capital Works project.

(b) Is a 72-year amortization period typical for projects of this nature? If not, please explain why such an amortization period was chosen for this project.

YUB-YEC-1-98

Reference: **Application, Appendix 5.4, page 5.4-4**

Issue: **Building Condition Reports 2020-2024**

Quote: "YEC is moving from a crisis management model (e.g. waiting for a furnace to fail in the middle of winter), towards a preventive maintenance schedule (identifying life cost cycling of a furnace) for all YEC-owned buildings. This change in approach can provide material cost savings. Building condition reports are required to formally document the structure and fabric of a property, describe the construction of the building and its current condition, and outline work required, timing and costs for completion."

Request:

Please explain YEC's rationale for implementing a crisis management model originally.

YUB-YEC-1-99

Reference: **Application, Appendix 5.4, page 5.4-6**

Issue: **Whitehorse Diesel Rental Substation Improvements**

Quote: "The project is to be closed in 2021 with total expenditures of $100,000 to be amortized over 45 years."

Request:

Is a 45-year amortization period typical for projects of this nature? If not, please explain why such an amortization period was chosen for this project.

YUB-YEC-1-100

Reference:	**Application, Appendix 5.5, page 5.5-1**
Issue:	**Deferred Studies Between $100,000 and $1 Million Not Impacting Rate Base**
Preamble:	YEC included the expenditures for the EV Infrastructure Project and P125 Trashrack Study, forecasted at $200,000 for each study in 2021.

Request:
Please confirm that the $200,000 for each project will not be added to rate base in this GRA. Please explain if there are plans to include costs for these projects in future GRAs.

YUB-YEC-1-101

Reference:	**Application, Appendix 5.5, page 5.5-1**
Issue:	**Deferred Studies, EV Infrastructure Project, Electric Vehicle Charging Stations**
Quote:	"The Yukon government 'Our Clean Future: A Yukon Strategy for Climate Change, Energy and a Green Economy' includes a number of actions to encourage the adoption of electric vehicles in Yukon, and the construction of public electric vehicle charging stations. The Yukon Government is forecasting 5,000 electric vehicles in the Yukon by 2030. YEC must be proactive in undertaking infrastructure upgrades and improvements to accommodate the anticipated increased demand on the electrical grid due to this planned growth. Strategy development will assess the potential impact of electric vehicles on the Yukon electrical system and identify a path forward for YEC to meet these challenges. Not addressing this could result in unforeseen costs and reactionary programs."

Request:
(a) Please provide a breakdown of the forecasted $200,000 for this project. More specifically, provide the activities YEC is planning to engage in and provide the cost allocated to each activity. Does YEC foresee any customer contributions related to costs for this project?

(b) Please provide your preliminary view on whether the Capital Works projects discussed in this application will defer or eliminate infrastructure upgrades related to electric vehicle charging station growth.

(c) How many electric vehicle charging stations have been installed by the Yukon Government and YEC?

(d) What rate schedule(s) apply to these charging stations and how are these revenues accounted for in YEC's Application?

(e) Please include details of the quantities of energy supplied through and any revenues for YEC resulting from the charging stations.

(f) In YEC's view, why is it reasonable for system demand to be increased and the charges recovered through rates when the benefits of the charging stations would only accrue to those who own electric vehicles?

YUB-YEC-1-102

Reference: **Application, Appendix 5.5, page 5.5-1**
Issue: **P125 Trashrack Study**
Quote: "The P125 intake is becoming blocked with debris and frazil ice. These blockages are currently being removed manually by divers and plant operators. This results in multiple outages each year to address blockages. Not addressing this issue will mean continued outages and requirement for divers to address the issue manually. A track [sic] rack must be installed that can permanently address the variety of debris encountered at the intake. The study will confirm the deck structural capacity and other details such as power supply and trash rack geometry."

Request:

(a) Please provide the number and duration of outages caused by the debris and frazil ice blockage in the last 10 years, on a per annum basis, and the costs incurred for these outages.

(b) Please provide a breakdown of the forecast $200,000 for this project. More specifically, provide the activities YEC is planning to engage in and provide the cost allocated to each activity.

YUB-YEC-1-103

Reference: **Application, Appendix 5.6, page 5.6-1**
Issue: **ERP System Upgrades**
Quote: "Given YEC's role as the primary generator of electricity for an isolated grid, it is critical to maintain a modern and robust Enterprise Resource Planning (ERP) system. ERP system refers to a type of software that organizations use to manage day-to-day business activities such as accounting, procurement, project management, maintenance management and supply chain operations. Best practice is to update systems regularly to ensure that the systems are up to date. The project involves upgrades to the ERP system components to the recommended latest stable versions. System experts are contracted to help with individual components as these are critical systems and YEC has no inhouse expertise."

Request:

(a) Please explain the implications of not upgrading the ERP system components to the recommended latest stable versions.

(b) Please explain how often YEC has updated the ERP system in the last 10 years and provide the cost of these upgrades.

(c) Please provide YEC's analysis comparing the expected benefits of this project to the forecast costs. Please include an explanation of cost savings or cost avoidances that have been or are expect to be realized.

YUB-YEC-1-104
Reference: Application, Tab 7 schedules, Schedule 4, page 7-8
Issue: Cost of Capital Calculation

Request:
(a) Please confirm that cell G58 of Schedule 4 should equal cell N25 of Schedule 7. If not confirmed, please explain and provide the calculation of the value in cell G58.

(b) Please confirm that cell M56 of Schedule 4 should equal cell M60 multiplied by cell K56. If not confirmed, please explain and provide the calculation of the value in cell M56.

(c) Please confirm that cell M58 of Schedule 4 should equal cell M60 multiplied by cell K58. If not confirmed, please explain and provide the calculation of the value in cell M58.

(d) Please confirm that cell M60 of Schedule 4 should yield the same value as the sum of cells M56 and M58. If not confirmed, please explain. If confirmed, please explain why it does not yield the same value and correct if necessary.

(e) If any of parts (a), (b), (c) and (d) are confirmed, please provide the corrected schedules along with an explanation of any changes to YEC's revenue requirement or rates resulting from the corrections.

YUB-YEC-1-105
Reference: Application, Tab 7 schedules, Schedule 9, page 7-13
Issue: Revenues

Request:
(a) Please explain how the revenue figures in rows 5, 11, 15, 19, 23 and 32 are calculated.

(b) Please provide references to where the calculation(s) for part (a) are explained in the Application.

YUB-YEC-1-106
Reference: Application, Tab 7 schedules, Schedule 11, page 7-16
Issue: Interest Costs

Request:
Please explain why there is no interest cost in cell N46 of Schedule 11 for new 2021 debt-2021 true up.

YUB-YEC-1-107

Reference: **Application, Section 3.4, Rate base, page 3-22; and Tab 7, Schedule 2A, page 7-4**

Issue: **Working Capital**

Quote: From page 3-22 of the Application:

"The balance of the change in net rate base from mid-year 2018 approved to mid-year 2020 reflects increased working capital ($1.8 million increase in 2021 forecast over 2018 approved of $5.3 million)."

Schedule 2A from page 7-4:

Yukon Energy Corporation
Effect of GST on Working Capital
($000s)

Schedule 2A
November 2020

Line No.	Description	Cross Ref.	2018 GRA Compliance	Actual 2018	Actual 2019	Forecast 2020	Forecast Existing 2021	Forecast Proposed 2021
1	Expenses subject to GST		42,084	37,733	53,916	69,534	99,535	102,279
2	GST Rate		5.00%	5.00%	5.00%	5.00%	5.00%	5.00%
3	GST Recoverable		2,104	1,887	2,696	3,477	4,977	5,114
4	Day Factor		14	14	14	14	14	14
5	Recoverable portion of GST impact		81	72	103	133	191	196

Yukon Energy Corporation
Effect of GST on Working Capital
($000s)

Schedule 2A
November 2020

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3	GST Recoverable		2,104	1,887	2,696	3,477	4,977	5,114
4	Day Factor		14	14	14	14	14	14
5	Recoverable portion of GST impact		81	72	103	133	191	196

Request:

Please provide a complete reference to any Tab 3, Tab 5, Tab 7 or other schedule that can be used for the same purpose of clearly arriving at the YEC's Line No. 1 "Expenses subject to GST" for all years indicated.

YUB-YEC-1-108
Reference: **Application, Summary item 1(c), page 5; Table 3.14, page 3-22**
Issue: **Depreciation Expense**

Quote: "Depreciation and Amortization Expenses: Approval of depreciation and amortization expenses forecast of $13.125 million for 2021, including approval of the following:
i. Updated Depreciation Rates: Approval of updated depreciation rates as set out in Tab 7, with an overall increase to 2021 depreciation expense of approximately $0.636 million; and …

c. **Depreciation and Amortization Expenses:** Approval of depreciation and amortization expenses forecast of $13.125 million for 2021, including approval of the following:

i. **Updated Depreciation Rates:** Approval of updated depreciation rates as set out in Tab 7, with an overall increase to 2021 depreciation expense of approximately $0.636 million; and

Table 3.14:
Depreciation and Amortization
($000)

	2018 Approved	Actual 2018	Actual 2019	Forecast 2020	Forecast Existing 2021	Forecast Proposed 2021
Fixed Asset Depreciation	$ 12,196	$ 12,185	$ 12,677	$ 12,963	$ 12,945	$ 13,581
Less: Customer contribution	-5,652	-5,635	-6,237	-6,482	-5,911	-5,911
Less: Amortization of fire insurance recoveries	-262	-262	-262	-262	-262	-262
Less: Disallowed Depreciation	-204	-204	-204	-204	-204	-204
Plus: Amortization of deferred charges	5,063	5,020	5,079	4,992	5,921	5,921
Total Depreciation & Amortization	$ 11,141	$ 11,104	$ 11,053	$ 11,007	$ 12,489	$ 13,125

Notes:
1. Disallowed depreciation reflects fixed asset depreciation amounts for disallowed assets per YUB Orders: $0.004 million (YUB 1992-1), $0.012 million (YUB 2013-01) and $0.188 million (YUB 2018-10).

Request:
(a) Please clarify that the difference between Forecast 2020 ($12,963 thousand) and Forecast Existing 2021 ($12,945 thousand) fixed asset depreciation amounts represent a decrease in depreciation expense of $18 thousand that is due to decreases in fixed asset amounts subject to depreciation expense. If not confirmed, please fully explain all reasons for the $18 thousand decrease in fixed asset depreciation expense. Please include in the response the total amount of depreciable assets used in each of the Forecast 2020 fixed asset depreciation ($12,963 thousand) and Forecast Existing/Proposed 2021 fixed asset depreciation calculations ($12,945/$13,581 thousand) and a complete reference to where those amounts can be confirmed in YEC's supporting Tabs.

(b) Please clarify that the difference between Forecast Proposed 2021 ($13,581 thousand) and Forecast Existing 2021 ($12,945 thousand) fixed asset depreciation amounts represents an increase in depreciation expense of $636 thousand that is due to changes in proposed depreciation parameters of average service life and Iowa curve dispersion and mode. If not confirmed, please explain the reason for the $636 thousand increase in fixed asset depreciation expense.

(c) Please provide a breakdown of the $636 thousand increase in fixed asset depreciation expense, referenced in part (b) above, between changes in average service life and changes in Iowa Curve dispersion and mode.

(d) Please provide detailed calculations by asset class ID and description that support YEC's amortization of customer contributions in the amounts of Forecast 2020 ($6,482 thousand) and Forecast Existing 2021 / Forecast Proposed 2021 ($5,911 thousand). Please ensure that both asset class ID, description and working formulae are included in the requested worksheet. Alternatively, if the calculations are available elsewhere in YEC's Application, please provide a complete reference to any Tab 3, Tab 5, Tab 7 or other schedule that can be used for the same purpose of clearly arriving at the referenced amounts.

(e) Please explain how YEC determines its amortization rates for contributions and its process for retiring contributions.

(f) For Forecast 2020 ($4,992 thousand) and Forecast Existing 2021 / Forecast Proposed 2021 ($5,921 thousand) amortization of deferred charges amounts, please provide a list identifying each deferred charge that comprises the amounts noted and the basis of the amortization period for each deferred charge. If each constituent calculation is available elsewhere in YEC's Application, please provide a complete cross reference to any Tab 3, Tab 5, Tab 7 or other schedule that can be used for the same purpose of clearly arriving at the referenced amounts.

(g) The Board has summarized YEC's reporting in Tab 3 and Tab 7 of the amortization of contributions, fire insurance recoveries and deferred charges in the following table. Please reconcile the "Variance between reporting schedule" column by identifying the nature of the cost that constitutes the variance and by providing an explanation for why the costs are not being reported consistently by YEC between Tab 3 and Tab 7 schedules:

	Tab 3, Schedule 3.14	**Tab 7, Schedule 5**	**Variance between reporting schedule**
	($ thousands)		
Amortization of customer contributions	(6,482)	(5,291)*	(1,453)
Amortization of fire insurance recoveries	(262)		
Amortization of deferred charges/costs	4.992	$3,540	1,452
Total Forecast 2020	**(1,752)**	**(1,751)**	
Amortization of customer contributions	(5,911)	(4,723)*	(1,450)
Amortization of fire insurance recoveries	(262)		
Amortization of deferred charges/costs	5,921	4,471	1,450
Total Forecast (Exiting and Proposed) 2021	**(252)**	**(252)**	

Source: Tab 3, Schedule 3.14 and Tab 7, Schedule 5 (where * is described as "amortization of contributions and fire insurance recoveries").

(h) Please explain how the lack of complete references between schedules (as noted in part (f) above) and the variance between reporting schedules for what has effectively been described as the same cost (as noted in part (g) above) has been responsive or helpful to the Board with respect to Directive #23 which addressed the Board's concerns about YEC's standard of disclosure with respect to its deferral and reserve accounts.

YUB-YEC-1-109

Reference: **Application, Section 6.12, Directives (from Board Order 2018-10) related to revenue requirement: YEC response to Directive #21 – Depreciation and amortization expense details, page 6-5; YEC response to Directive #23 – Improved disclosures on deferral & reserve accounts, page 6-5; Tab 9 Depreciation Study, pages 9-6, 9-98 and 9-99; Tab 7, Schedule 3A, page 7-6**

Issue: **Responses to Board Directives #21 and #23**

Quote: "**Basis of Depreciation Estimates**

The straight-line, broad (average) life group, remaining-life depreciation system was employed to calculate annual and accrued depreciation in this study. In this system, the annual depreciation expense for each group is computed by dividing the original cost of the asset less allocated depreciation reserve less estimated net salvage by its respective average life group remaining life. The resulting annual accrual amounts of all depreciable property within a function were accumulated, and the total was divided by the original cost of all functional depreciable property to determine the depreciation rate. The calculated remaining lives and annual depreciation accrual rates were based on attained ages of plant in service and the estimated service life and salvage characteristics of each depreciable group. The computations of the annual functional depreciation rates are shown in Appendix A."

Preamble: In response to Directive #21 of Board Order 2018-10, YEC prepared "Tab 7, Schedules 3A and 3B" which it stated provided the Board-directed detailed depreciation and amortization calculations.

With respect to YEC's response to Direction #21, the Board observes that Tab 7 contains Schedule 3A only and not Schedules 3A and 3B as referenced by YEC.

Further, the Board observes that Tab 7, Schedule 3A does not consistently include working formulae that would otherwise provide confirmation of the depreciation expense calculations therein.

In response to Directive #23 of Board Order 2018-10, YEC prepared "Tab 7, Schedules 1 and 3" which it stated implemented changes to the structure of those schedules in order to improve disclosure and reporting of deferral and reserve accounts as directed by the Board.

Request:

(a) Please revise Tab 7, Schedule 3A to include the "Asset Class ID" for each account and corresponding working formulae supporting the depreciation expense calculations under each of the "2021 Existing Forecast Depreciation" and "2021 Proposed Forecast Depreciation" columns. Please provide references that would build to the $666,498 thousand "cost at 2020 year end" using individual line items from Tab 7, Schedule 3 or any other Tab 7 schedule.

(b) Please explain why Tab 7, Schedule 3A does not appear to use a mid-year approach for the purposes of calculating depreciation expense. Please explain this observation fully and clarify whether this is a change from previously approved YEC depreciation expense calculation methodology.

(c) Please explain why Tab 7, Schedule 3A appears to generally rely on the use of a depreciation rate based on "years" alone and does not appear to use a depreciation rate that includes consideration of the proposed Iowa Curve (including the associated mode and dispersion). Please explain this observation fully and clarify whether this is a change from previously approved YEC depreciation expense methodology.

(d) Referring to the responses to parts (a) to (c) above, please explain any difference between the depreciation expense methodology described in those responses and the basis of the annual depreciation estimates as described in the Tab 9 Depreciation Study on page 9-6 and quoted above.

(e) Please provide the calculations (including working formulae) supporting the amount of "depreciation study differences" by asset class grouping shown on Tab 7, Schedule 3A, given that the amounts to not appear to reflect the same amounts provided in the Tab 9 Depreciation Study, Appendix A at pages 9-98 and 9-99. Please also explain fully why the "depreciation study differences" on Tab 7, Schedule 3A should not reflect the same "depreciation true-up annual provision for true-up" amounts in Appendix A on pages 9-98 and 9-99.

(f) Notwithstanding the differences in dollar amounts noted in part (e) above, please explain fully whether YEC's implied method to collect or refund any required "depreciation study differences" as a set dollar amount (as indicated on Tab 7, Schedule 3A) is a change from previously approved YEC depreciation expense methodology.

(g) Please clarify whether any of the information from Tab 9, Depreciation Study, Appendix A is used to inform the Tab 7, Schedule 3A depreciation expense calculations. If confirmed, please clearly cross reference the specific information originating from Tab 9, Depreciation Study, Appendix A and where it is relied on, or input, in Tab 7, Schedule 3A.

(h) Referring to Tab 9, Depreciation Study, Appendix A on pages 9-98 and 9-99, please revise Appendix A to include working formulae supporting the depreciation expense calculations therein.

(i) Referring to Tab 9, Depreciation Study, Appendix A on pages 9-98 and 9-99, please clarify why the columns identified as "Accumulated Depreciation," "AD difference" and "Accumulated depreciation of A/D Difference" must be added together to collectively determine the December 31, 2018 accumulated depreciation balance. Please also explain why, in the alternative, YEC did not simply provide the December 31, 2018 actual book accumulated depreciation balances.

(j) Referring to the quote in the preamble, if Schedule 3B was omitted by YEC in error, please provide the schedule and ensure that it includes an "Asset Class ID" and description for each account and working formulae for any calculations contained therein.

YUB-YEC-1-110

Reference: **Application, Section 1.2, Table 1-2, footnote 1, page 1-6; Section 3.4, page 3-22**

Issue: **Depreciation Expense**

Quote: From footnote 1, Table 1-2:

"1. Excludes depreciation rate changes & impact of accelerated amortization of VGC Group contributions."

From Section 3.4:

New contributions since 2018 include $11.5 million from VGC Group to fund McQuesten Substation and system improvement capital costs, which contributions are being amortized over the expected 12 year life of the Eagle Gold mine."

"Accelerated amortization of VGC Group contributions related to McQuesten Substation and system improvement costs result in these assets reducing total depreciation and amortization costs by $0.665 million in the 2021 test year."

Preamble: Referring to Table 1-2, YEC states that "depreciation (fixed asset increases)" increases by the amount of $1.154 million when comparing "2021 GRA over 2018 Approved" revenue. Further, YEC provides footnote 1 which states that the $1.154 million increase "excludes depreciation rate changes & impact of accelerated amortization of VGC Group contributions".

Request:

(a) Please provide further information detailing the how the contribution amount was determined and any agreement between parties (if required) with respect to the $11.5 million contribution from VGC Group to fund McQuesten Substation and system improvement capital costs.

(b) Please provide the calculation of the $1.154 million increase noted in the preamble and include a complete reference to where the information used in the requested calculation can be found in YEC's supporting Tabs.

(c) Please provide the calculation of the $0.665 million decrease as quoted and include a complete reference to where all information used in the requested calculation can be found in YEC's supporting Tabs.

(d) Please provide further detail with respect to the contributions being amortized on an "accelerated" basis as compared to the amortization periods and rates YEC uses for other contribution amounts. Please also explain whether the contribution assets at issue are

collectively the "McQuesten Substation and system improvement costs" of some portion thereof.

(e) Please clarify whether YEC had previous Board approval for the 12-year amortization period being used and, in the absence of previous Board approval of a 12-year amortization period, what the expected average service is for the contribution assets at issue.

YUB-YEC-1-111

Reference: **Application, Tab 9, Depreciation Study, pages 9-6 and 9-16**
Issue: **Depreciation Expense**
Quote: "**Basis of Depreciation Estimates**

The straight-line, broad (average) life group, remaining-life depreciation system was employed to calculate annual and accrued depreciation in this study. In this system, the annual depreciation expense for each group is computed by dividing the original cost of the asset less allocated depreciation reserve less estimated net salvage by its respective average life group remaining life. The resulting annual accrual amounts of all depreciable property within a function were accumulated, and the total was divided by the original cost of all functional depreciable property to determine the depreciation rate. The calculated remaining lives and annual depreciation accrual rates were based on attained ages of plant in service and the estimated service life and salvage characteristics of each depreciable group. The computations of the annual functional depreciation rates are shown in Appendix A."

"Depreciation True Up Calculation

Annual depreciation expense amounts for the depreciable accounts of Yukon Energy were calculated by the straight-line method, average life group procedure, and remaining-life technique. With this approach, remaining lives were calculated according to standard ALG expectancy techniques, using the Iowa Survivor Curves noted in the calculation. For each plant account, the difference between the book depreciation reserve and theoretical depreciation reserve, was divided by the average remaining life to yield the annual depreciation true up. These calculations are shown in Appendix A.

Depreciation Rate Calculation Process

Annual depreciation expense amounts for accounts all accounts were calculated by the straight-line, average life group procedure, whole-life technique.

These calculations are shown in Appendix A. The calculations of the theoretical depreciation reserve values and the corresponding remaining life calculations are shown in workpapers. Book depreciation reserves were based on Company individual accounts and the theoretical reserve computation was used to compute a composite remaining life for each account."

Preamble: The above quotes refer to the use of a remaining-life depreciation system; remaining-life technique and whole-life technique.

Request:

(a) Please fully explain the difference between each of the remaining-life depreciation system, remaining-life technique and whole-life technique references. Please also include an explanation of how each are incorporated and used within YEC's depreciation expense calculations.

(b) Please provide a copy of the interview notes (as between YEC and Alliance Consulting Group) prepared during the course of YEC's depreciation study.

(c) Please clarify that all data relied on during the preparation of YEC's depreciation study was actuarial-based and did not contain any simulated data.

(d) YEC indicates in many instances "there was insufficient transactional data for an actuarial life analysis" notwithstanding that this statement was accompanied by other operational observations which implied the existence of actuarial data.[3] Please provide a retirement rate analysis (observed life table) for each depreciation study account including the plotted actual data points and proposed survivor curve.

(e) Please provide a calculated annual accrual and accrued depreciation for each depreciation study account.

(f) Please clarify if YEC uses amortization accounting for all depreciation study accounts that have been assigned the use of a square curve (SQ). If not confirmed, please explain fully how YEC accounts for asset retirements for depreciation study accounts using an SQ.

(g) Please explain the basis for YEC's asset classes and groupings. If YEC has relied on information respecting asset classes and groupings from other jurisdictions, please provide a copy of that information including a description of the assets that should be recorded into each separate asset class and grouping.

YUB-YEC-1-112

Reference: **Application, Tab 9, Depreciation Study, page 9-22**
Issue: **Depreciation Expense**
Quote: "**Account 1615-201 Hydro Buildings and Improvements 40 R2.5**

This account is a newly created group. In 2019, an asset previously booked in account 1645-200, Buildings- Structures and Improvements. The asset is an elevator at Aishihik Hydro plant. The plant balance in this account will be $10.3 million. The approved life and curve for this account is 40 R2.5. Based on information provided by Company personnel and judgment, this study recommends retaining the existing 40 R2.5 for this account."

[3] For example, in the Application at page 9-24, detail for Account 1615-506, Hydro Water Wheels, Turbines, and Generators, indicates that "Operational personnel stated the approved life is too long, and that they have already replaced runners and rewound generators prior to reaching 60 years," which implies the existence of actuarial data.

Request:

(a) Please provide further rationale for the proposed 40-R2.5 life and curve for Account 1615-201, which is a "newly created group" of assets that were previously within Account 1645-200 and for which YEC is now proposing a 50-R2 life and curve.

(b) Please clarify the specific information provided by Company personnel that supports a 40-R2.5 life and curve for this account.

YUB-YEC-1-113

Reference: **Application, Tab 9, Depreciation Study, page 9-24**
Issue: **Depreciation Expense**
Quote: "**Account 1615-506 Hydro Water Wheels, Turbines, and Generators 60 R3**

This account consists of water wheels, turbines, and other related assets used in hydro production including runners, gates, regulator systems, generator cooling systems, and generators. The plant balance in this account at December 31, 2018 is $26.3 million. The approved life and curve for this account is 85 R3. Operational personnel stated the approved life is too long, and that they have already replaced runners and rewound generators prior to reaching 60 years. There was insufficient transactional data for an actuarial life analysis. Based on information provided by Company personnel, this study recommends decreasing the life to 60 years and retaining the R3 curve for this account."

Preamble: YEC is proposing a significant reduction (of 25 years) in average service life for this account.

Request:

Please provide the dollar amount of retirements by transaction year and vintage for the years 1998-2018.

YUB-YEC-1-114

Reference: **Application, Tab 9, Depreciation Study, page 9-25**
Issue: **Depreciation Expense**
Quote: "**Account 1615-600 Hydro Accessory Electrical Equipment 40 R2.5**

This account consists of generator controls, bus equipment, and other related assets used in hydro production including auxiliary generators, switching equipment, excitation systems, and station control systems. The plant balance in this account at December 31, 2018 is $26.6 million. The approved life and curve for this account is 45 R3. Based on information provided by Company personnel and the indications from the actuarial analysis, this study recommends decreasing the life to 40 years and moving to an R2.5 curve for this account."

Request:

Please clarify the specific information provided by Company personnel that supports a reduction (of five years) in average service life for this account.

YUB-YEC-1-115

Reference: **Application, Tab 9, Depreciation Study, page 9-32**
Issue: **Depreciation Expense**
Quote: "**Account 1620-403 Diesel Fuel Holders, Producers, and Accessories 40 R2**

This account consists of pumps, storage tanks, natural gas/fuel oil piping and other related assets at the diesel production plants. The plant balance in this account at December 31, 2018 is $1.7 million. The approved life and curve for this account is 25 R2. Discussions with operational personnel stated the existing life seems short, that many of the existing assets are approximately 15 to 20 years old, are still reliable, and not currently in need of replacement. There was insufficient transactional data for an actuarial life analysis. Based on type of assets, information provided by Company personnel and judgment, this study recommends increasing to a 40 year life and retaining the existing R2 curve for this account."

Request:
Please clarify that the observations made by Company personnel supporting an increase (of 15 years) in average service life are generally applicable to all assets in this account.

YUB-YEC-1-116

Reference: **Application, Tab 9, Depreciation Study, page 9-37**
Issue: **Depreciation expense**
Quote: "**Account 1625-300 Dist. System - Poles and Fixtures 40 R2**

This account consists of the installation costs of poles and fixtures used for supporting overhead distribution conductors and service wire. The plant balance in this account at December 31, 2018 is $8 million. The approved life and curve for this account is 35 R2. Discussions with operational personnel stated that right of ways are narrower for distribution, putting the poles closer to vehicles and making them more susceptible to being damaged. Additionally, permafrost puts more stress on the shorter, lower class poles. Overall, operations estimates the life of distribution poles to be 10 years less than transmission poles, which use a life of 50 years. There was insufficient transactional data for an actuarial life analysis. Based on type of assets, information provided by Company personnel and judgment, this study recommends moving to a 40 R2 for this account.

Preamble: Statements in the above quote appear to conflict with YEC's proposed increase (of 5 years) in average service life for this account.

Request:
Please clarify how the increased susceptibility to damage from narrow rights-of-way and permafrost to YEC's distribution system poles and fixtures is consistent with a proposed increase (of five years) in average service life for this account.

YUB-YEC-1-117

Reference: **Application, Tab 9, Depreciation Study, pages 9-38 and 9-40**
Issue: **Depreciation Expense**
Quote: "**Account 1625-304 Dist. System - Brushing 50 R2**

This account consists of costs associated with the brushing of the distribution system. The plant balance in this account at December 31, 2018 is $45 thousand. The approved life and curve for this account is 50 R2. The Company capitalizes the brush clearing of ROWs when installing new lines. Operations stated the existing life is reasonable and matches the life of O/H Conductor, which have a 50 year life."

"Account 1625-401 Dist. System – O/H Conductors 50 R2

This account consists of overhead conductors and other facilities associated with the distribution system. The plant balance in this account at December 31, 2018 is $75 thousand. The approved life and curve for this account is 35 R2. Discussions with operational personnel stated they would expect the life of distribution conductor to be shorter than transmission conductor. There was insufficient transactional data for an actuarial life analysis. Based on type of assets, information provided by Company personnel and judgment, this study recommends increasing the life to 50 years while retaining the R2 curve for this account."

Request:
Notwithstanding YEC's operational personnel statement that distribution system O/H conductors should have a shorter life than transmission system O/H conductors, what other factors and rationale support a 50-R2 life and curve for this account?

YUB-YEC-1-118

Reference: **Application, Tab 9, Depreciation Study, page 9-39**
Issue: **Depreciation Expense**
Quote: "**Account 1625-305 Dist. System – Survey Costs 50 R2**

This account consists of costs association with land surveys and assessments related to distribution easements. The plant balance in this account at December 31, 2018 is $600 thousand. The approved life and curve for this account is 50 R3. There was insufficient transactional data for an actuarial life analysis. Based on type of assets, information provided by Company personnel and judgment, this study recommends retention of the existing 50 year life with a slight change in the curve to an R2 for this account."

Request:

(a) On what basis is YEC able to propose a change to a 50-R2 life and curve from the approved 50-R3 life and curve without the benefit of an actuarial life analysis?

(b) Please provide the directional impact of the change proposed in terms of an increase or decrease to depreciation expense for this account for the year 2021.

(c) Please clarify if the proposed life and curve for this account is intended to match that of Account 1625-304 Dist. System – Brushing and Account 1625-401 Dist. System – O/H Conductors.

YUB-YEC-1-119

Reference: **Application, Tab 9, Depreciation Study, pages 9-41 and Comparison of Life Parameters, page 9-104**

Issue: **Depreciation Expense**

Quote: "**Account 1625-401 Dist. System – O/H Services 40 R2**

This account consists of installation costs associated with overhead services such as transmission line installation and upgrades. The plant balance in this account at December 31, 2018 is $2.1 million. The approved life and curve for this account is 40 R2. Discussions with Company personnel indicated the majority of services are overhead. The Company is experiencing an increased number of new services and need to update aging infrastructure. Operations stated commercial services would have a shorter life than residential services. There was insufficient transactional data for an actuarial life analysis. Based on type of assets, information provided by Company personnel and judgment, this study recommends retention of the 40 R2 life and curve for this account."

Request:

(a) Please confirm whether Tab 9, Depreciation Study, page 9-41 contains a typographical error in referencing "Account 1625-401 Dist. System – O/H Services 40 R2" and should correctly state "Account 1625-410 Dist. System – O/H Services 40 R2" as indicated on page 9-104. If not confirmed, please explain.

(b) Please describe at a high level the proportion of O/H service installations that are commercial versus residential for the years 1998-2018 and explain how this information does or does not influence retention of the 40-R2 life and curve for this account.

YUB-YEC-1-120

Reference: **Application, Tab 9, Depreciation Study, page 9-44**

Issue: **Depreciation Expense**

Preamble: For each of Account 1625-610 Dist. System – Meters and Account 1625-620 Dist. System – Meter Equipment, YEC has proposed a change to a 16-SQ life and curve from the approved 30-R2 life and curve in part because it "pulls meters for testing at eight years and based on test results may use the meter up to 16 years."

Request:

(a) Please clarify whether the decision to pull meters for testing at eight years is a change in policy from any policy that was in place when a 30-R2 life and curve was approved for this account.

(b) Referring to the response to part (a) above, was the change in policy based on internal or external factors? Please explain fully.

(c) Please provide observed life tables and the plotted actual data points with the approved 30-R2 survivor curve for each of the two accounts referenced in the preamble.

YUB-YEC-1-121

Reference: **Application, Tab 9, Depreciation Study, page 9-45**
Issue: **Depreciation Expense**
Quote: "**Account 1625-710 Dist. System – Substation Equipment 40 S0**

This account includes all distribution substation equipment such as bus compartments, control equipment, ground rods, foundations, and conversion equipment, switching equipment, and switchboards. The plant balance in this account at December 31, 2018 is $1.3 million. The approved life and curve for this account is 40 R2. Discussions with operations indicated the Company is experiencing a shorter life due to an increased number of faults, more short-lived electronic equipment, and the move to SF6 all decreasing the lives of existing assets. There was insufficient transactional data for an actuarial life analysis. Based on type of assets, information provided by Company personnel and judgment, this study recommends a 40 S0 life and curve for this account."

Request:

(a) On what basis is YEC able to propose a change to a 40-S0 life and curve from the approved 40-R2 life and curve without the benefit of an actuarial life analysis?

(b) Please explain why YEC did not propose to decrease the average service life from 40 years as opposed to changing the curve (from R2 to S0) given the statement that YEC is experiencing a shorter life for these assets.

(c) Please provide the directional impact of the change proposed in terms of an increase or decrease to depreciation expense for this account for the year 2021.

YUB-YEC-1-122

Reference: **Application, Tab 9, Depreciation Study, page 9-47**
Issue: **Depreciation Expense**
Quote: "**Account 1625-730 Dist. System – Substation Fences 30 R4**

This account includes the costs of fences located at distribution substations. The plant balance in this account at December 31, 2018 is $100 thousand. The existing life for this account is 20 R4. The approved life for this account is 20 years. There was insufficient transactional data for an actuarial life analysis. Based on type of assets, information provided by Company personnel and judgment, this study recommends moving to a 30 R4 life and curve for this account."

Request:

(a) Please clarify the specific information provided by Company personnel that supports an increase (of 10 years) in average service life for this account.

(b) Please confirm whether Tab 9, Depreciation Study, page 9-104 contains a typographical error in referencing an existing SQ Iowa Curve for this account. If not confirmed, please explain.

YUB-YEC-1-123

Reference: **Application, Tab 9, Depreciation Study, page 9-49**
Issue: **Depreciation Expense**
Quote: "**Account 1625-905 Dist. System – Line Transformers 35 R2.5**

This account includes all line transformers, capacitors, lightning arrestors, and related equipment. The plant balance in this account at December 31, 2018 is $4 million. The approved life and curve for this account is 40 R2.5. Discussions with operations stated the transformers are subject to higher loading due to growth and expect the life of these assets to decrease as a result. There was insufficient transactional data for an actuarial life analysis. Based on type of assets, information provided by Company personnel and judgment, this study recommends moving to a 35 R2.5 life and curve for this account."

Request:

(a) Please clarify whether the higher loading due to growth in the system has led to increased asset retirements.

(b) Please clarify whether the higher loading due to growth in the system has resulted in exceeding the maximum load recommended for YEC's distribution line transformers.

(c) Please provide the dollar amount of retirements by transaction year and vintage for the years 1998-2018.

YUB-YEC-1-124

Reference: **Application, Tab 9, Depreciation Study, pages 9-51 and 9-59**
Issue: **Depreciation Expense**
Quote: "**Account 1635-300 Main Trx - Poles and Fixtures 50 R3**

This account consists of poles and fixtures used for transmission purposes. The plant balance in this account at December 31, 2018 is $60 million. The approved life and curve for this account is 65 R3. Discussions with Company personnel indicated the Company has a Transmission Line Refurbishment program in place and has started replacing 50 year old poles. Yukon expects this to continue in the future to address its aging infrastructure. Periodically poles are replaced without having to replace the conductor. There was insufficient transactional data for an actuarial life analysis. Based on type of assets, information provided by Company personnel and judgment, this study recommends moving to a 50 R3 for this account."

"Account 1640-300 Sub Trx – Poles & Fixtures 50 R3

This account consists of poles, fixtures, and other related assets used in transmission operations, including anchors, brackets, cross arms, braces, and foundations. The plant balance in this account at December 31, 2018 is $4.1 million. The approved life and curve for this account is 45 R3. Discussions with Company personnel indicated the Company has a Transmission Line Refurbishment program in place and has started replacing 50 year old poles. Yukon expects this program to continue in the future to address its aging infrastructure. Periodically poles are replaced without having to replace the conductor. There was insufficient transactional data for an actuarial life analysis. Based on type of assets, information provided by Company personnel and judgment, this study recommends moving to a 50 R3 for this account."

Request:

(a) Please clarify whether YEC applies any treatment to its wooden poles as part of a capital maintenance program that would serve to lengthen the expected average service life. If so, please identify the program under which this capital work is conducted.

(b) Please fully explain whether it is the replacement of 50-year-old transmission poles that is the main rationale for the proposed change to a 50-R3 life and curve from the approved 65-R3 life and curve or some other factor.

(c) Please provide the expected average service life of the new poles that are replacing the 50-year-old poles being retired due to the refurbishment program.

(d) Please provide the dollar amount of retirements by transaction year and vintage for the years 1998-2018.

(e) Given that it appears that YEC maintains O/H conductor accounts for each of the poles and towers,[4] please clarify whether YEC is installing any towers as the pole replacement assets and, if so, identify in which account these transmission tower assets are being recorded.

(f) Given that it appears that YEC maintains O/H conductor accounts for each of the poles and towers,[5] please clarify whether YEC is installing any towers as part of a new transmission line, and identify in which account these transmission tower assets are being recorded.

(g) Referring to the responses to part (e) and (f) above, please provide the expected average service life of YEC's transmission tower assets.

(h) Please clarify whether there is any difference in the general type of assets in Account 1635-300 Main Trx – Poles and Fixtures 50-R3 and Account 1640-300 Sub Trx – Poles & Fixtures 50-R3. In the response, please address both poles and towers.

YUB-YEC-1-125

Reference:	**Application, Tab 9, Depreciation Study, pages 9-52 to 9-55**
Issue:	**Depreciation Expense**
Preamble:	For each of Account 1635-402 Main Trx – O/H Conductors/Poles and Account 1635-404 Main Trx – O/H Conductors/Towers, YEC has proposed a 60-R3 life and curve from the approved 50-R3 life curve based on: "Discussions with operational personnel estimate the life of transmission conductor to be about 10 years longer than distribution conductor, which is moving to a 50 year life." Further, life and curves for Account 1635-304 Main Trx – Brushing and Account 1635-305 Main Trx – Survey Costs are proposed to "mirror the life of overhead conductor, which uses a 60 year life."

Request:
Notwithstanding YEC's operational personnel statement that transmission system O/H conductors should have a longer life (by ten years) than distribution system O/H conductors, what other rationale supports a 60-R3 life and curve for these four transmission accounts?

[4] Account 1635-402, Main Trx – O/H Conductors/Poles and Account 1635-404, Main Trx – O/H Conductors/Towers, pages 9-54 and 9-55.
[5] Account 1635-402, Main Trx – O/H Conductors/Poles and Account 1635-404, Main Trx – O/H Conductors/Towers, pages 9-54 and 9-55.

YUB-YEC-1-126

Reference: **Application, Tab 9, Depreciation Study, page 9-56**
Issue: **Depreciation Expense**
Quote: "**Account 1635-710 Main Trx – Substation Equipment 45 S0**

This account consists of bus compartments, batteries, control equipment, transformers, breakers, and other related station equipment used in transmission operations. The plant balance in this account at December 31, 2018 is $66.6 million. The approved life and curve for this account is 54 S0. Discussions with Company personnel indicated they are experiencing a shorter life for the assets in this account due to the increasing amount of short lived electronic assets at the stations. Operations also stated that transformers typically last between 40 to 50 years; breakers have a 35 year life for OCB and 50 years for SF6. Several breakers have already been replaced in 2018 and 2019. There was insufficient transactional data for an actuarial life analysis. Based on type of assets, information provided by Company personnel and judgment, this study recommends moving to a 45 S0 for this account."

Request:
Please explain why substation equipment should not reflect a similar average service life between distribution and transmission function assets. For example, Account 1625-710 Dist. System – Substation Equipment (proposed 40-S0 life and curve) and Account 1635-710 Main Trx – Substation Equipment (proposed 45-S0 life and curve).

YUB-YEC-1-127

Reference: **Application, Tab 9, Depreciation Study, pages 9-59 to 9-67 and 9-105**
Issue: **Depreciation Expense**
Preamble: The Board requires further detail with respect to YEC's sub transmission accounts at the referenced pages.

Request:
(a) Please provide detail and rationale respecting the segregation of YEC's transmission assets into a further sub transmission category, which is further segregated into accounts designated as (Minto Mine) "Mnt Mn".

(b) Please clarify that, with the exception of those accounts designated by "Mnt Mn" (1640-301, 1640-306, 1640-307, 1640-407 and 1640-711), the depreciation life and curve proposed for YEC's sub transmission asset accounts (1640-300, 1640-304, 1640-401, 1640-405 and 1640-710) are intended to mirror the equivalent main transmission assets under the "1635" series of transmission asset accounts because they generally include the same types of assets subject to the same types of operating conditions. If not confirmed, please explain further.

(c) Referring to the sub transmission asset accounts designated by "Mnt Mn" (1640-301, 1640-306, 1640-307, 1640-407 and 1640-711), please explain the rationale for these accounts being amortized on the basis of a 12-SQ life and curve. Please also provide the dates upon which the Minto Mine assets were installed and commenced amortization and why a 12-SQ life and curve remains applicable.

YUB-YEC-1-128

Reference: **Application, Tab 9, Depreciation Study, page 9-69**
Issue: **Depreciation Expense**
Quote: "**Account 1645-200 Bldg & Otr – Structures and Improvements Hydro 50 R2**

This account includes the cost associated with the structures and improvements associated with a hydro facility including berms, signage, roads, boilers, and other related assets used to support general operations. The plant balance in this account will be $2.2 million, which reflects a transfer of $10.3 million from this account into account 1615-201. The approved life and curve for this account is 40 R2.5. There is no historical activity to analyze. Discussions with Company personnel indicated these structures are on the water so they would have a little shorter life for various components. However, the existing 40 years is shorter than what would be expected. The newer buildings are more technology driven and have a little less longevity than the older built structures. There was insufficient transactional data for an actuarial life analysis. Based on the type and use of assets and judgment, this study proposes moving to 50 R2 at this time."

Request:

(a) Please clarify if the transfer of $10.3 million into Account 1615-201 was the main factor for the proposed increase (of 10 years) to a 50-R2 life and curve from the approved 40-R2.5 life and curve for this account.

(b) If part (a) above is not confirmed, please provide further rationale for the increase in average service life given Company personnel statements that "these structures are on the water so they would have a little shorter life for various components" and that "the existing 40 years is shorter than what would be expected" and that "newer buildings are more technology driven and have a little less longevity than the older built structures".

YUB-YEC-1-129

Reference: **Application, Tab 9, Depreciation Study, page 9-70**
Issue: **Depreciation Expense**
Quote: "**Account 1645-201 Bldg & Otr – Building and Improvements 50 R2**

This account includes the cost associated with buildings and improvements that includes staff housing, warehouses, offices, fencing, building envelopes, fish hatchery, yard work, guard rails. The plant balance in this account at December 31, 2018 is $10.1 million. The approved life and curve for this account is 55 R1. There is very limited historical activity to analyze. Discussions with Company personnel indicated many of the assets in this account have shorter lives than the building. Based on the limited indications from the actuarial analysis, mix and type of assets, and judgment, this study proposes moving to 50 R2 at this time."

Request:

(a) Please clarify the types of assets that Company personnel indicated "have shorter lives than the building" and the approximate per cent proportion of these assets compared to all assets in the account.

(b) Please provide the dollar amount of retirements by transaction year and vintage for the years 1998-2018 and indicate the proportion of assets being retired that have been identified as those having shorter lives than the building in part (a) above.

YUB-YEC-1-130

Reference: **Application, Tab 9, Depreciation Study, page 9-77**
Issue: **Depreciation Expense**
Quote: "**Account 1645-507 Bldg & Otr – Wind Monitoring Equipment 15 SQ**

This account includes costs associated with wind monitoring equipment. This includes tall towers and ultrasonic anemometers. The plant balance in this account at December 31, 2018 is $14 thousand. The approved life and curve for this account is 20 SQ. There is no historical data to analyze. Discussions with Company personnel indicated there is one wind monitoring site, which will likely be out of this process within a year. Company believes it might be 10 years old now. Based on the type of assets, existing life, Company input, and judgment, this study proposes moving to 15 SQ at this time."

Request:

(a) Please clarify if the reference to "one wind monitoring site, which will likely be out of this process within a year" is an indication that this asset will no longer be used and useful at the end of 2021.

(b) If confirmed, please explain why YEC is proposing to continue to amortize the assets over 15 years rather than simply retire them and recover any remaining net book value at the end of 2021.

YUB-YEC-1-131

Reference: **Application, Tab 9, Depreciation Study, page 9-78**
Issue: **Depreciation Expense**
Quote: "**Account 1645-605 Bldg & Otr – Communication Equipment 20 L4**

This account includes the installation costs of telephone, fibre optic and wireless equipment for general use in connection with utility operations and includes antennae, booths, cable, handsets, insulators, poles and fixtures, remote control equipment and line, storage batteries, switchboards, underground conduit and cable for telephone or fibre optics and other related equipment. The plant balance in this account at December 31, 2018 is $4.6 million. The approved life and curve for this account is 20 L4. Discussions with Company personnel indicated there is a variety of equipment types and varying lives. The life analysis indicates a life between 20-25 years. Based on the type and use of the equipment,

Company input, life analysis indications, and judgment, this study proposes retention of 20 L4 at this time. A graph of the observed life table versus the recommended curve type is shown below."

Request:
Please provide an observed life table and the plotted actual data points showing both a 20-L4 and 25-L4 survivor curve for this account.

YUB-YEC-1-132

Reference: **Application, Tab 9, Depreciation Study, page 9-79**
Issue: **Depreciation Expense**
Quote: **"Account 1645-810 Bldg & Otr – Company Owned Houses/Land 40 R3**

This account includes the costs of upgrades and maintenance associated with the land of houses owned by the company. The plant balance in this account at December 31, 2018 is $59 thousand. The approved life and curve for this account is 30 R3. Discussions with Company personnel indicated the newest house is from 2005 and the oldest is pre-1980. Company believes the existing life is too low. There is not enough historical experience for analysis. Based on the type of assets, Company input, and judgment this study proposes moving to 40 R3 for this account."

Request:
Please clarify why "costs of upgrades and maintenance associated with the land of houses owned by the company" should be capitalized into rate base as opposed to expensed annually as an operating and maintenance cost.

YUB-YEC-1-133

Reference: **Application, Tab 9, Depreciation Study, page 9-82**
Issue: **Depreciation Expense**
Quote: "**Account 1650-411 Trxptn – Utility Vehicles 8 L2**

This account includes the cost of utility trailers, cargo trailers, ATVs, snowmobiles, and boats. The plant balance in this account at December 31, 2018 is $344 thousand. The approved life and curve for this account is 7 L2. Discussions with Company personnel indicated the line crews use these types of vehicles for seven years before it is retired. Company indicated that occasionally, a quad or snow mobile will move to a plant and have a longer life, but an estimated 80% of these types of assets do not. However, the life analysis indicates a longer life than existing and longer than what the Company expects, which ranges from 10 to 15 years. Giving consideration to the type and use of assets, Company input and expectations, we propose moving the average out to eight years to reflect the 20% of assets that remain longer. This study proposes 8 L2 for this account."

Request:
Please provide the "life analysis indicat[ing] a longer life than existing and longer than what the Company expects, which ranges from 10 to 15 years".

YUB-YEC-1-134

Reference:	**Application, Tab 9, Depreciation Study, page 9-83**
Issue:	**Depreciation Expense**
Quote:	"**Account 1650-412 Trxptn – Sedans and Station Wagons 11 S4**

This account includes the cost of vans, cars and smaller vehicles. The plant balance in this account at December 31, 2018 is $138 thousand. The approved life and curve for this account is 7 L2. Discussions with Company personnel indicated these vehicles are lasting longer than the existing seven years. Company policy is if a vehicle is 8 years or older, has 160,000 km, and has incurred maintenance costs greater than 15% in one year, they would retire. However, they have fallen behind on this schedule. The life analysis supports Company discussion that these vehicles are lasting longer and the slippage in the schedule, with a life indication of at least 12 years or more with a steeper dispersion pattern. Giving consideration to the Company policy, recent experience, expectations and judgment, this study proposes moving from 7 L2 to 11 S4 at this time."

Request:
(a) Please provide the "life analysis support[ing] Company discussion that these vehicles are lasting longer and the slippage in the schedule, with a life indication of at least 12 years or more with a steeper dispersion pattern".

(b) If the life analysis discussed in part (a) above was not based on actuarial data, please clarify how YEC is able to propose a change to an 11-S4 life and curve from the approved 7-L2 life and curve without the benefit of an actuarial life analysis.

(c) Please provide the directional impact of the change proposed in terms of an increase or decrease to depreciation expense for this account for the year 2021.

YUB-YEC-1-135

Reference:	**Application, Tab 9, Depreciation Study, pages 9-84 and 9-105**
Issue:	**Depreciation expense**
Quote:	"**Account 1650-420 Trxptn – Trucks and Pole Trailers 25 R1.5**

This account includes the cost of large trucks and pole trailers that carry less than 10,000 lbs. The plant balance in this account at December 31, 2018 is $11 thousand. The approved life and curve for this account is 25 R1.5. Discussions with Company personnel indicated the existing 25 year life is reasonable for the assets. There is no historical experience to analyze. Giving consideration to the type of assets, existing life, Company expectations, and judgment, this study proposes retention of the 25 R1.5 at this time."

Request:
Given that page 9-105 indicates an existing 31-R1.5 life and curve, please clarify which is the correct approved depreciation parameters and confirm that YEC continues to propose a 25-R1.5 life and curve for this account.

YUB-YEC-1-136

Reference: **Application, Tab 9, Depreciation Study, page 9-86**
Issue: **Depreciation Expense**
Quote: "**Account 1650-440 Trxptn – Trucks ¾ to 2 Tons 9 L2**

This account includes the cost of trucks that are ¾ to 2 Tons used by employees to perform day to day duties. The plant balance in this account at December 31, 2018 is $2.6 million. The approved life and curve for this account is 10 R2. Discussions with Company personnel indicated that electricians would drive 90,000 and operations 70,000 in approximately 10 years. Linemen would drive 115,000 and would hit the maximum mileage in 3-4 years but there are other factors that cause the Company to retain these vehicles longer. There are equal numbers of each type of vehicle. Company expects they will be replaced by 8 years. However, the life analysis indicates a life between 10 to 11 years. Giving consideration to Company policy, recent experience, expectations and judgment, this study proposes moving from 10 R2 to 9 L2 at this time."

Request:
(a) Please provide the "life analysis indicat[ing] a life between 10 to 11 years".

(b) If the life analysis discussed in part (a) above was not based on actuarial data, please clarify how YEC is able to propose a change to a 9-L2 life and curve from the approved 10-R2 life and curve without the benefit of an actuarial life analysis.

(c) Please provide the directional impact of the change proposed in terms of an increase or decrease to depreciation expense for this account for the year 2021.

(d) Please provide an observed life table and the plotted actual data points showing both a 9-L2 and 10-R2 survivor curve for this account.

YUB-YEC-1-137

Reference: **Application, Tab 9, Depreciation Study, page 9-88**
Issue: **Depreciation Expense**
Quote: "**Account 1650-490 Trxptn – Foremost 20 R3**

This account includes the cost of large specialty vehicles which are usually tracked not wheeled vehicles. The plant balance in this account at December 31, 2018 is $1.0 million. The approved life for this account is 25 years. Discussions with Company personnel indicated that there is one tracked vehicle and a 2011 Kenworth truck equipped with an auger. Company personnel believe the life should match the life of the greater than 3 ton trucks of 20 years. There is no historical experience to analyze. Giving consideration to type of assets, Company input and expectations and judgment, this study proposes moving to 20 R3 at this time."

Request:

(a) Please explain why the life of the tracked vehicle should match that of the Kenworth truck.

(b) Please clarify whether there have been any overhauls to either vehicle that would be expected to increase average service life at the time they were carried out. Please explain fully.

(c) Please clarify whether there had been an Iowa Curve previously approved for this account and, if so, please provide that value.

YUB-YEC-1-138

Reference: **Application, Tab 9, Depreciation Study, page 9-92**
Issue: **Depreciation Expense**
Quote: "**Account 1665-403 LNG Plant – Fuel Holders 60 R2**

This account includes the installed cost of fuel handling and storage equipment used between the point of fuel delivery to the station and the intake pipe including boilers, pumps, produces, regenerators, tanks, and vaporizers. The plant balance in this account at December 31, 2018 is $13.2 million. The approved life for this account is 32 years. The assets are new so there is limited historical data. Discussions with Company personnel indicated the tanks are nickel, double walled with no moisture ingress. The existing fuel holder life of 32 years is considered to be low and with reasonable maintenance, a 60 year life is expected. Considering the type of assets, information provided by Company personnel and judgment, this study recommends moving the life to 60 years with the R2 for this account."

Preamble: YEC is proposing a significant increase (of 28 years) in average service life for this account.

Request:

Please provide any objective evidence such as manufacturers' information available to YEC that further supports the increase (of 28 years) in average service life for this account.

YUB-YEC-1-139

Reference: **Application, Tab 9, Depreciation Study, page 9-93**
Issue: **Depreciation Expense**
Quote: "**Account 1665-500 LNG Plant – Generators 40 SQ**

This account includes the installed cost of other prime movers including engines, piping, air-filtering system, towers, pumps, hoists, compressors, tanks, waste heat boilers, antifluctuators and other related equipment. The plant balance in this account at December 31, 2018 is $20.9 million. The approved life for this account is 40 years. The assets are new so there is limited historical data. Discussions with Company personnel indicated the current life is still applicable for this account. Considering the type of assets, information provided by Company personnel and judgment, this study retaining the life of 40 years and using a SQ dispersion for this account."

Request:
Given that no other LNG asset class (within the 1665 series) has incorporated the use of a SQ curve, please explain why, for Account 1665-500 LNG Plant – Generators, it is appropriate to maintain an SQ curve as opposed to the R2 curve used for all other LNG accounts.

YUB-YEC-1-140
Reference: Application, Tab 9, Depreciation Study, pages 9-22, 9-24, 9-69 and 9-102; Tab 7, Schedule 3A, Calculation of depreciation expense for Hydro overhauls and Diesel production overhauls, page 7-6

Issue: **Depreciation Expense**

Note: The following accounts were excluded from the depreciation study:
1615-504 Hydro Assets Overhaul
1620-504 Diesel Assets Overhaul
1620-504 Diesel Assets Overhaul
Asset 7060 removed from asset group 1615-506
Asset 8856 transferred from asset group 1645-200 to 1615-201

Quote: Note: The following accounts were excluded from the depreciation study:
1615-504 Hydro Assets Overhaul
1620-504 Diesel Assets Overhaul
1620-504 Diesel Assets Overhaul
Asset 7060 removed from asset group 1615-506
Asset 8856 transferred from asset group 1645-200 to 1615-201

Preamble: Tab 7, Schedule 3A indicates that amortization periods for Hydro overhauls, Diesel production overhauls and LNG production overhauls are 10, five, and two years respectively.

Request:

(a) Please confirm that the amortization periods for Hydro overhauls, Diesel production overhauls and LNG production overhauls of 10, five and two years respectively, as shown on Tab 7, Schedule 3A, remain valid.

(b) Referring to part (a) above, please explain how each of the amortization periods was determined and what specifically is proposed to be overhauled under each Hydro, Diesel and LNG category.

(c) Please identify Asset 7060, its historical cost, and why it is necessary to remove it from asset group 1615-506 (Hydro-Wtrwhls, Trbines & Gen's) on Tab 7, Schedule 3A given that there is no indication on page 9-24 (Hydro-Wtrwhls, Trbines & Gen's) of YEC's Tab 9, Depreciation Study that any asset was excluded from consideration in the depreciation study for Account 1615-506.

   i. Please clarify if Asset 7060 is depreciable and, if so, provide a complete reference to where the basis for its depreciation and related depreciation expense amount for 2021 can be confirmed within YEC's supporting Tabs; and

   ii. If part (b)(i) above confirms that Asset 7060 is not depreciable, please confirm that Asset 7060 is not included in the $26,904.6 thousand cost at 2021 year end as shown on Tab 7, Schedule 3A for the Waterwheels, Turbines & Generation account and clarify whether or not Asset 7060 forms a component of rate base that is subject to a return calculation.

(d) Please identify Asset 8856 and confirm that it is the elevator at Aishihik Hydro plant discussed on pages 9-22 (Hydro Buildings and Improvements) and 9-69 (Bldg & Itr – Structures and Improvements Hydro) of YEC's Tab 9, Depreciation Study.

YUB-YEC-1-141

Reference: **Application, Section 3.4, Table 3.14.3, page 3-24; and Appendix 5.2, Section 5.2-5, Overhauls & reserve for site restoration projects, page 5.2-11**

Issue: **Reserve for Site Restoration Continuity Schedule**

Request:

(a) Please clarify whether the FD7 overhaul is related to YEC's reserve for site restoration projects and, if so, explain why the $580,000 forecast for 2021 was not included in Table 3.14.3.

(b) If part (a) above is not confirmed, please fully explain how YEC proposes to treat the $580,000 expenditure for regulatory purposes in the year 2021.

YUB-YEC-1-142
Reference: Application, Tab 2, Section 2.2.2, page 2-6
Issue: Industrial Demand

Request:

(a) Please explain how other ratepayers are protected from the effects of significant large industrial loads and potential swings in demand if those industrial loads come on and off line.

(b) What are the requirements in the power purchase agreements, or other industrial electricity purchase agreements, to manage peak demand?

(c) Please confirm how many times the mine load supply was curtailed due to generation issues.

(d) Please provide the monthly demand for VGC since the beginning of the operation.

(d) Are the requirements to manage peak demand the same for all industrial customers? Please explain.