City of Whitehorse
(CW)

TOPIC: **Normalized Sales versus Long Term Average**

REFERENCE: **CW-YEC-1-2**
CW-YEC-1-9
CW-YEC-1-11

PREAMBLE: CW notes that YEC does not appear to use weather normalization as a basis for sales forecasts.

QUESTION:

a) Please fully explain why YEC does not use weather normalized data to derive sales forecasts.

b) Please discuss the difference between using weather normalized data and long-term average data.

c) Please fully explain YEC's understanding of how weather normalization is implemented.

d) Please fully discuss YEC's views on whether the use of weather normalized data would improve sales forecasts.

e) Please fully explain whether the use of weather normalized data could be useful in the determination of Hydro Generation for the LWRF.

ANSWER:

(a)

The response to CW-YEC-1-2 states YEC does not provide a weather normalized version of its actual sales to retail and industrial customers. As reviewed in Tab 2 of the Application, YEC directly serves customers only in seven separate communities, accounting for only 10% of 2021 forecast firm YEC energy sales – separate weather normalized analysis for each community's retail sales by customer class has not been considered to be a worthwhile exercise. With respect to industrial sales forecast, forecasts

are based on information from each customer and weather normalization is not a relevant factor for consideration.

The GRA Application in Tab 2 states that YEC's Wholesale sales forecast model does weather normalize the actual sales data (internally in the model) and uses this along with other variables to forecast a 'weather normal' sales forecast based on historical average temperatures.

(b) and **(c)**

Weather normalization is a process that is used to correct sales forecasts for weather impacts. The process adjusts actual energy or peak sales to what would have happened under normal weather conditions. When normalizing actual data, the long-term average temperature is used to define normal (average) weather conditions.

Weather normalization does not apply directly to long-term average generation forecasts. The total sales forecasts plus system losses becomes the generation forecast. The utility applies long-term average modelling to the generation forecast to determine the expected source of generation, assuming long term average water conditions.

(d)

YEC does use normal or expected weather in the wholesale sales forecast. Similar analysis would not be likely to materially improve YEC retail sales forecasts (see response to "a" above) and would not improve industrial sales forecasts.

(e)

Weather normalized data is not directly relevant to the determination of Hydro Generation for the LWRF however there is an indirect connection. Weather-normalized data is used to generate wholesales forecasts which in turn are combined with other customer class forecasts to determine the total grid load that is used for assessing long-term average annual hydro generation based on available water year records for the Yukon Integrated System.

TOPIC: **Sales Forecasts – Wholesale Sales to ATCO 1 Electric Yukon (AEY)**

REFERENCE: **CW-YEC-1-3**

PREAMBLE: In the response, YEC refers CW to AEY for responses to the CW questions. Given that this is a YEC application, and YEC has incorporated AEY data, the CW requires information to understand how YEC, and parties, can test the information.

QUESTION:

a) Please fully discuss all processes and analyses that YEC used to assess or test the AEY data. In the response, please fully explain if YEC sought the requested information from AEY in the preparation of the response.

b) In the context of a YEC application, please fully explain how parties, such as CW, can test the information related to AEY.

ANSWER:

(a)

YEC receives Fish Lake forecast directly from AEY as well as historical AEY sales data. AEY actual sales is one of the inputs into YEC's wholesales forecast.

YEC assumes that the Fish Lake forecast provided is accurate but tests its reasonableness by comparing it to historical results; by confirming that the amounts provided are within operating limits; and by assessing whether both AEY hydro units are scheduled to operate.

(b)

YEC has explained the approach to validation of Fish Lake forecasts in (a). Other than the Fish Lake forecast, YEC does not use AEY sales forecasts for forecasting sales (only AEY actual historical data). YEC only uses AEY sales forecasts as a comparison to YEC forecasts for reasonableness, not as a direct input.

TOPIC: **Sales Forecasts – General Service Sales – Faro Mine Remediation**

REFERENCE: **CW-YEC-1-8**

PREAMBLE: YEC states that "YEC reviewed the reasonableness of the forecast and compared it to actual historical results."

QUESTION:

a) Please fully explain the review for reasonableness that YEC conducted, along with any analyses or working papers.

ANSWER:

(a)

YEC reviewed Faro Mine's history and noted that it was on a planned upward trend in consumption with 2018 growing 7% over 2017, 2019 growing by 22% over 2018 and 2020 forecast to grow 52% over 2019. This growth is consistent with previous expectations developed from customer communications to the effect that new electrical loads related to water treatment were connected to the system in 2019. In terms of assessing the 2021 forecast load, YEC compared 2020 actual sales to June 30 to the 2020 forecast. Actual Faro consumption in the first half of 2020 was 49% of the full year forecast. Based on this analysis, YEC assessed the 2021 forecast as reasonable.

TOPIC: **Labour**

REFERENCE: **CW-YEC-1-15**

PREAMBLE: In the response YEC mentions prior AMR\AMI applications.

QUESTION:

a) Please provide a list of YUB decisions that dealt with YEC AMR\AMI implementations.

ANSWER:

(a)

YEC has not to date sought to implement Automated Meter Reading (AMR) or Advanced Metering Infrastructure (AMI). AMR/AMI implementation was previously sought by AEY and reviewed as part of AEY (or YECL) GRA proceedings in 2008/09 and 2014.

YUB decisions on AMR/AMI implementation along with key directions are provided in two separate AEY GRA decisions. As noted in the summaries that follow, each time the Board noted concern with the business case for the project, and stated that it was not prepared to accept the project and that AEY was to remove the project and its costs from rate base:

1. **2009-2 – Appendix A Reasons for Decision:** The Board is not prepared to accept the AMR project at this time and directs YECL to remove this project and its costs from rate base. The Board encourages YECL to work with all Intervenors, including YEC, to review and assess the costs and potential benefits of the AMR project. Upon completion of the review, YECL is to submit a new business case that outlines the benefits of such a project over time, how it addresses the concerns raised by Intervenors, and describe potential economies by partnering with YEC and the City of Whitehorse in the scope and implementation of the project. The Board expects this business case to be filed with YECL's next GRA. (Page 42)

2. **2014-06 – Appendix A Reasons for Decision:** The Board has concerns with the business case because the cross-over of the benefits is still nine years away which puts the economic benefits of the business case at risk. The Board agrees with

UCG's submission that the payback period is too long for such a small customer base, especially when one considers the rate at which technology changes. Furthermore, the Board shares the concerns of CW that until there is conclusive evidence either way regarding the imposition of TOU billing, proceeding with AMR at this time may result in additional risk to customers. Due to these concerns the Board is not prepared to accept the project and directs YECL to remove this project and its costs from rate base. The Board further directs YECL to reflect this finding in its compliance filing. (Page 76)

TOPIC: **Labour Rates**

REFERENCE: **CW-YEC-1-16**

PREAMBLE: **In the response, at lines 7-17 YEC states:**

> Regarding performance increments, employees subject to the Collective Bargaining Agreement can have up to two increments per year (every six months) if they are not capped at their maximum salary level. With many new hires recently this means a lot of performance increments. Management and Professional employees are eligible for performance increments annually if they are not capped at their maximum salary level. As union employees can have different dates for increments based on their start dates throughout the year, YEC forecasts performance increments by using an average wage for that position for the year. Additionally, due to the timing of the performance increase being dependent on the timing of the performance review, we also get into situations were increments are late and run between different years, but the retro ends up in year it is paid. As such, a calculation of cost of performance increments would be extremely difficult.

QUESTION:

a) Please provide an analysis of each of collective Bargaining employees and Management and Professional employees that identifies:

   i) The number of employees that are capped at the maximum for their salary level, and

   ii) The number of employees below the maximum salary level.

b) Please provide the information for each of 2019, 2020, and 2021.

ANSWER:

(a) and **(b)**

The analysis of collective bargaining employees is as follows:

	2019	2020	2021
Capped at Maximum	40	37	40
Below Maximum	26	25	25

The analysis of management and professional employees is as follows:

	2019	2020	2021
Capped at Maximum	8	8	15
Below Maximum	16	20	13

TOPIC: **Production**

REFERENCE: **CW-YEC-1-17**

PREAMBLE: In Q (a), CW asked "Please provide copies of all analysis or business cases that YEC has done or prepared comparing the cost of owning diesel generation compared to rentals. If no such analysis or business cases have been prepared, please fully explain why not." In the response, YEC states:

> Yukon Energy's 2016 Resource Plan included action plans focusing on short and long term options to reduce the capacity shortfalls, including building a new 20 MW diesel plant.
>
> However, based on feedback received from Yukoners as well as to address impacts of the Yukon government Climate Change Strategy Yukon Energy's Board of Directors decided not to pursue a new 20 MW thermal plant at this time and look at options to replace capacity at Yukon Energy's existing generation facilities as diesel engines reach end-of-life.
>
> Yukon Energy is pursuing the new renewable generation capacity options as outlined in the 10-Year Renewable Electricity Plan [please see CW-YEC-1-36 (a) Attachment 1 for the copy of the Plan], including battery energy storage system, Atlin Hydro Expansion Project, and the potential development of pumped storage at Moon Lake. Until the new renewable resource options are developed, diesel rentals are continuing to be the best available option at this time to address capacity shortfalls.

QUESTION:

a) Please confirm that no "analysis or business case" comparing the cost of owning generation and renting diesel generation exists. If not confirmed, please provide copies of all analyses or business cases that YEC has done or prepared comparing the cost of owning diesel generation to the cost of rentals.

b) Please provide an analysis of the impact on the YEC forecasts of not pursuing a new 20 MW thermal plant at this time.

ANSWER:

(a)

Not confirmed.

During the 2017/18 GRA proceeding it was noted that rented diesels were being adopted as the only option available to address the identified N-1 dependable capacity shortfall, i.e., there was no time available to develop any permanent or owned resource option. The business case assessment in this instance was very simple, i.e., rented diesel were required to meet the N-1 criterion and there was no other reasonable alternative at the time given YEC's mandate to ensure safe and reliable service to customers.

The initial diesel rentals were implemented as a near term solution, and YEC has carried out ongoing assessments of options to displace reliance on rented diesels, including various YEC-owned diesel plant options. The alternatives considered are summarized below. Please see also Yukon Energy's most recent resource plan provided as CW-YEC-1-36(a) Attachment 1 for details regarding renewable energy options considered.

- **20 MW Diesel Plant:** Following issuance of the 2016 Resource Plan, YEC examined in detail a 20 MW new greenfield diesel plant option as well as a range of other resource options. Ongoing Yukon Energy review and consultation regarding the 20 MW plant option indicated a wide range of public concerns regarding development of a new large greenfield diesel plant. The results of the public engagement indicated very limited social license for a greenfield diesel project in Yukon at this time.

- **Diesel Replacement at Existing GS Plants:** In October 2019, it was determined that considering the results of the technical, environmental and socio-economic research, as well as feedback from the public, YEC would focus on potential options to add or replace capacity at existing thermal generation facilities on an incremental basis as diesel engines are retired.

- **Renewable Capacity Alternatives:** The 10-Year Renewable Electricity Plan identified potential renewable generation options that could significantly reduce the need to rely primarily on thermal generation to address the forecast N-1 dependable capacity shortfall. Reduction in the reliance on thermal generation aligns with the emerging policy directions, such as Yukon government's 93% long-term average renewable electricity requirement and 97% renewable target, and the Federal government's Net Zero by 2050 policy.

  YEC's current resource plan (the 10-Year Renewable Electricity Plan) does not contemplate the construction of a new 20 MW greenfield thermal plant in the future. Should a change in circumstance trigger a re-evaluation of YEC's long-term resource plan, a greenfield thermal project may be considered at that time. The current resource plan includes consideration of 12.5 MW of near-term diesel retirement replacements at Whitehorse, Faro and Dawson City, as well as the near-term BESS project, dependable hydro capacity provided by the Atlin Hydro Expansion project, and longer-term Tutshi-Moon Lake Pumped Storage project (Phase 1).

For specific business case comparison of rented diesel with owned diesel, YEC can provide the following current Levelized Cost of Capacity (LCOC) cost comparisons that include capital and non-fuel O&M costs for diesel rentals versus a 12.5 MW plant of YEC owned diesels[1](all estimates assume YEC weighted average cost of capital at 4.794%, based on an assumed 8.70% return on equity [40% of capital] and 2.19% interest on new long-term debt [60% of capital]):

1. **Diesel Rental LCOC costs (2022$) of $211 per kW-yr for a 20-year life (comparable to BESS), and $243 per kW-yr for a 40-year life (comparable to new owned diesel):** These LCOC costs assume diesel rental costs [includes cost of spares] of $162,400/MW (2021$) connected for winter 2021/22 to provide 27MW of operating capacity, 4% per year escalation of diesel rental costs over an assumed 20 or 40 year life, $27,000 per year (2022$) escalated at 2%/yr for variable non-fuel O&M, and $3.5 million (2022$) of infrastructure capital costs (based on infrastructure capital costs for existing 17 rentals [30.8 MW] escalated

[1] The LCOC estimates are consistent with analysis provided during the BESS Project Part 3 proceeding, subject to adjustment to reflect comparison here between rented and owned diesels with an assumed 40 year life for each option.

at 2%/year). Excluding the infrastructure capital, the LCOC is $200.9 per kW-yr for a 20-year life.

2. **12.5MW Owned Diesel plant LCOC costs (2022$) of $186/kW-yr without property tax and $212/kW-yr with property tax:** The Midgard estimate for the 12.5 MW new greenfield diesel located at Takhini included 5 units, each 2.5 MW, with a capital cost (2019$) of $2.6 million per MW and O&M non-fuel fixed O&M cost (2019$) of $64,500 per MW escalated at 2% per year. The assumed diesel plant life was 40 years. The assumed plant location at Takhini meant that this new diesel LCOC did not include any property tax.[2]

   YEC has updated the above LCOC for a new diesel plant within Whitehorse City limits, with Whitehorse property tax is included,[3] to address public concerns identified with locating a new diesel plant at Takhini. The updated new diesel plant LCOC is $212/kW-year (2022$), based on 2019$ LCOC of $199.8/kW-year escalated at 2% per year to 2022.

The analysis is very sensitive to the ongoing rental cost escalation assumed for the rented diesel option, i.e., rented diesel LCOC (2022$) over 40 years is $243/kW-yr with 4%/year rental escalation, $203/kW-yr with 3%/year rental escalation, and $172/kW-yr with 2%/year rental escalation.

(b)

There can be no impact to 2021 revenue requirements because the 20 MW thermal plant could not have been in service for this test year under any reasonable scenario. YEC is not able to provide useful assessment of the impact on future year revenue requirements, given the range of options (e.g. site location, building v. modular, etc) that need to be considered for each permanent diesel option and the continued near-term ability to rely on cost-effective rented diesel options.

[2] The plant location is outside the Whitehorse city limits and not subject to City of Whitehorse property taxes.
[3] Midgard's estimate in a separate study of new diesel fixed O&M with Whitehorse property tax is at least $91,000/MW (2019$).

A range of relevant other impacts on YEC resource planning are reviewed below.

The main impact on resource planning of YEC not pursuing a 20 MW new greenfield project at this time is the ability to provide concerted attention to the assessment and development of a range of other options involving renewables and non-fossil fuel generation as well as diesel replacements.

Initial focus on a new 20 MW greenfield diesel plant, with potential expansion as capacity requirements continued to grow, meant that diesel replacement requirements outside of Whitehorse were not prioritized. These are now receiving priority attention, and highlighting overall grid dependable capacity requirements going forward involving replacement of retired diesel units.

Government policy development and public responses to consultation on the 20 MW diesel project have also highlighted priorities and options for the BESS project and other renewable resource dependable capacity projects that can secure potential federal grant funding support. These options are receiving priority attention.

Near-term reliance on rented diesels has enabled rapidly evolving dependable capacity requirements to be met on a timely basis and with low near-term cost impacts for ratepayers. As highlighted in response to “a” above, near-term rental costs are a comparatively low-cost option – the concern from the cost perspective comes with expected annual cost escalations over a few decades. In contrast, new owned plant options will require up front capital costs with peak rate increase impacts tending to come in the initial years of operation.

TOPIC: **Brushing**

REFERENCE: **CW-YEC-1-18**

PREAMBLE: **In the last paragraph of the response YEC states:**

> The vegetation management budget is typically about 80/20 split transmission/distribution. In 2019, the distribution portion was less due to the TLR work and the requirement to prioritize the brushing on the transmission system where the work was to take place.

QUESTION:

a) Please fully explain what is meant by "to prioritize the brushing on the transmission system." In the response, please provide a detailed analysis of the brushing activities and volume of work for the distribution system for each of 2016, 2017, 2018, and 2019.

ANSWER:

(a)

The decrease in distribution spending in 2019 is directly related to prioritizing the transmission ROW brushing for the TLR project. A detailed analysis of the brushing activities for each of 2016 through 2019 are as follows:

Year	2016	2017	2018	2019
Total Brushing Actual	**1,044,435.58**	**1,386,676.07**	**1,064,582.00**	**1,109,798.00**
Total Distribution Cost	**182,283.87**	**305,526.08**	**198,725.00**	**42,935.27**
Canyon	157,716.96	-		
South Fox	3,897.85		127,790.00	
Dawson	-	146,575.67		2,085.12
Drury Creek				25,648.35
Faro	384.66	37,371.53		1,075.55
Mayo (incl Keno)	135.78	67,446.19		3,265.60
Braeburn	7,026.54	6,131.60		
Champagne	-	9,870.43		
Johnsons Crossing	-	10,882.63		3,388.09
Little Fox	5,161.49	-		
Little Salmon	1,303.58	-	48,215.00	
McGundy	-	-	22,720.00	
Mendenhall	6,657.01	27,248.03		1,786.11
Wareham Hydro Structure				5,686.45
% Distribution Cost/Brushing Actual	**17%**	**22%**	**19%**	**4%**

TOPIC: **LWRF Stabilization Mechanism**

REFERENCE: **CW-YEC-1-22**

PREAMBLE: In the last paragraph of the response, YEC states "Yukon Energy is working to provide an updated LWRF Term Sheet in March 2021, along with related LWRF Annual Reports for 2019 and 2020."

QUESTION:

a) Please provide the status of the LWRF Term Sheet in March 2021, along with related LWRF Annual Reports for 2019 and 2020.

ANSWER:

(a)

On April 8, 2021, Yukon Energy provided correspondence to the Board seeking appropriate Board approvals in relation to an updated LWRF Term Sheet, and Yukon Energy's LWRF Annual Reports and Energy Reconciliation Adjustment ("ERA") Filings for 2019-2020.

Please see the correspondence available on the Board's website at the link below.
https://yukonutilitiesboard.yk.ca/pdf/YEC_2021_GRA/YEC_LWRF_Term_Sheet_and_Reports.Apr_8__2021.pdf

On April 16, 2021, the Board issued Order 2021-07 and directed that final determinations regarding Rate Schedule 39 and the LWRF Term Sheet and LWRF annual reports will be considered as part of YEC's 2021 GRA currently before this Board. This was reiterated in Order 2021-09.

On July 5, 2021 the Board also provided correspondence which outlined the proceeding schedule with respect to the UCG and NY motions and Round 2 IRs noting, "Round 2 IRs will be limited to matters related to Rate Schedule 39, the Low Water Reserve Fund, and follow-up on Round 1 IR responses. Further process steps will be determined after comments are received on August 24, 2021."

TOPIC: **Rate Relief**

REFERENCE: **CW-YEC-1-25**

PREAMBLE: YEC indicates it has not conducted any research into specific ways to provide rate relief to customers.

QUESTION:

a) Please fully explain, and discuss any additional research or analysis that YEC may have done in the intervening months, since the filing of the response to CW-YEC-1-25.

ANSWER:

(a)

YEC continues to pursue funding opportunities for key infrastructure projects (e.g. Atlin Hydro, Moon Lake Pumped Storage, Southern Lakes Transmission) to ensure affordability of electricity for ratepayers. No other additional research or analysis has been conducted.

TOPIC: **Transmission Line Refurbishment**

REFERENCE: **CW-YEC-1-28**

PREAMBLE: In the response, YEC indicates that the cost of Transmission Line Refurbishment was materially higher than the forecast because more work was completed.

QUESTION:

a) Please fully explain the YEC asset management strategy, including all testing, monitoring and other asset management lifecycle practices. In the response, please explain how YEC determined that more work than forecast was required. What criteria were used to drive this conclusion?

b) Please provide an analysis of the condition of the additional assets replaced, that indicate that more work than planned was required.

c) Please fully discuss, and provide an analysis of the impact on future costs of Transmission Line Refurbishment resulting from the increased work.

ANSWER:

(a)

Transmission line assets undergo a test and treat program that identifies the shell thickness of the pole and treats insect infestation. These assessments started in 2009 with a planned renewal every 10-15 years.

YEC also performs detailed line inspections. Detailed Inspections provide detailed information on the condition of Transmission structures in the field and identify defects that require correction.

- Detailed inspection provides information on the following structure elements: Poles, Crossarms, Insulators, Crossbraces, Hardware, Foundation, Guys, Vibration Dampers, Aerial Markers, Conductor & Shield Wires, Grounding & Bonding. Detailed Inspection also provides information on Vegetation.

- Detailed Inspection data is used to drive corrective maintenance and preventative replacement programs as well as to modify vegetation management cycles for the lines. Overhead Line Detailed Inspection cycles are planned for Transmission Lines 15 years after initial construction, and every 10 years thereafter.

The result of the assessments determines the scope of the transmission maintenance and refurbishment projects. The increase in work scope and spending in 2018 was justified due to lower contractor unit costs, reduced customer impact from outage frequency and duration, and reduced mob/demob costs for the contractor. This explanation was provided as follows in the initial response to CW-YEC-1-28:

> "The quantity of work accomplished in 2018 was significantly more than was forecasted, as a large portion of the overall 5 year planned work was completed in one year. The increase in work scope and 2018 spending was justified due to lower unit costs; the reduced customer impact of the transmission outage number and duration; and reduced mobilization and demobilization costs for the contractor."

(b)

As described in (a) above, YEC received favorable contractor rates through the RFP process in 2018. In order to capitalize on these favorable terms, YEC chose in bring forward work planned from future years into 2018. This was work that was recommended by the consultant as part of the assessment work and was previously planned to be completed as part of the multi-year Transmission Line Refurbishment project. YEC advanced the timing to take advantage of favorable financial terms as stated.

(c)

The quantum of identified work from the asset assessments has not changed (see response to "a" above). The efficiencies described in CW-YEC-2-10 (a) for completing additional work in 2018 reduces the amount of work in future years.

TOPIC: **Replacement of P125 Head Gate**

REFERENCE: **CW-YEC-1-31**

PREAMBLE: YEC indicates that the 2021 project was delayed until 2022.

QUESTION:

a) Please provide updated schedules that have the 2021 costs removed.

ANSWER:

(a)

Project construction has been delayed until 2022 - a more precise schedule has yet to be developed. Planning continues in 2021 which includes revision of the technical specifications based on learnings from the WH2 headgate replacement, as well as preparation and release of an RFP in Q4 2021.

TOPIC: **Diesel Retirement Replacement**

REFERENCE: **CW-YEC-1-37**

PREAMBLE: In the response, YEC states that the project will remain in WIP in 2021.

QUESTION:

a) Please confirm that YEC is NOT seeking approval in this rate application of the costs of the project for inclusion in rate base in 2022 or some later year, based on the information filed in this application. If not confirmed, please provide the business case for the Diesel Retirement Project.

ANSWER:

(a)

YEC confirms it is not seeking approval in this rate application of the costs of the project as the asset is not projected to be in-service by the end of 2021.