Section 1

Summary of results

	31.12.2021	31.12.2020
Going Concern Financial Status		
Market value of assets	$2,992,864,900	$3,015,005,300
Going concern funding liabilities	$2,973,907,700	$2,981,917,700
Funding excess (shortfall)	$18,957,200	$33,087,600
Funded ratio	100.6%	101.1%
Hypothetical Wind-up Financial Position		
Wind-up assets	$2,990,864,900	$3,013,005,300
Wind-up liability	$3,325,340,900	$3,471,697,200
Wind-up excess (shortfall)	($334,476,000)	($458,691,900)
Wind-up ratio	89.9%	86.8%
Solvency Financial Position		
Solvency assets	$2,990,864,900	$3,013,005,300
Solvency liabilities	$2,852,417,600	$2,896,047,500
Solvency excess (shortfall)	$138,447,300	$116,957,800
Solvency ratio	104.9%	104.0%
Funding Requirements in the year Following the Valuation[1]		
Total current service cost	$8,037,900	$11,331,800
Estimated member's required contributions	($276,000)	($398,000)
Estimated employer's current service cost	$7,761,900	$10,933,800
Employer's current service cost expressed as a percentage of member's pensionable earnings	42.51%	44.38%
Minimum special payments	$0	$0
Estimated minimum employer contribution	$7,761,900	$10,933,800
Estimated maximum eligible employer contribution	$7,761,900	$10,933,800
Next required valuation date	31.12.2024	31.12.2023

[1] Provided for reference purposes only. Contributions must be remitted to the Plan in accordance with the Minimum Funding Requirements and Maximum Eligible Contributions sections of this report.

Section 2
Introduction

To the Management Pension Committee of Canadian Utilities Limited

At your request, we have conducted an actuarial valuation of the Retirement Plan for the Employees of Canadian Utilities Limited and Participating Companies - Plan 1 (the "Plan"), sponsored by Canadian Utilities Limited (the "Company"), as at the valuation date, December 31, 2021. We are pleased to present the results of the valuation.

The contributions to the defined contribution component of the Plan are determined by the Plan provisions. An estimate of the defined contributions for 2022 is included in this report.

Purpose

The purpose of this valuation is to determine:

- The funded status of the Plan as at December 31, 2021 on going concern, hypothetical wind-up, and solvency bases;
- The minimum required funding contributions from 2022, in accordance with the *Alberta Employment Pension Plans Act* (the "Act"); and
- The maximum permissible funding contributions from 2022, in accordance with the *Income Tax Act.*

The information contained in this report was prepared for the internal use of the Management Pension Committee and the Company, and for filing with Alberta Treasury Board and Finance and with the Canada Revenue Agency, in connection with our actuarial valuation of the Plan. This report will be filed with Alberta Treasury Board and Finance and with the Canada Revenue Agency. This report is not intended or suitable for any other purpose.

In accordance with pension benefits legislation, the next actuarial valuation of the Plan will be required as at a date not later than December 31, 2024 or as at the date of an earlier amendment to the Plan depending on any funding implications.

Terms of Engagement

In accordance with our terms of engagement with the Company, our actuarial valuation of the Plan is based on the following material terms:

- It has been prepared in accordance with applicable pension legislation and actuarial standards of practice in Canada.
- As instructed by the Company, the going concern discount rate reflects a margin for adverse deviations of 0.30% per year.
- We have reflected the Company's decisions for determining the solvency funding requirements, summarized as follows:
  - Different plan wind-up scenarios were hypothesized for the hypothetical wind-up and solvency valuations.
  - No benefits were excluded from the solvency liabilities. However, an alternative settlement method for solvency funding purposes was hypothesized, whereby plan benefits were modified as permitted, pursuant to Alberta Treasury Board and Finance's *Update 13-01 Alternative Settlement Methods for Hypothetical Wind-Up and Solvency Valuations,* to replace future variable inflation protection with a fixed percentage increase.

See the Valuation Results – Solvency section of the report for more information.

Events since the Last Valuation at December 31, 2020

Pension Plan

There have been no special events since the last valuation date.

This valuation reflects the provisions of the Plan as at December 31, 2021. The Plan has not been amended since the date of the previous valuation, and we are not aware of any pending definitive or virtually definitive amendments coming into effect during the period covered by this report. The Plan provisions are summarized in Appendix F.

Assumptions

We have used the same going concern valuation assumptions and methods as were used for the previous valuation.

A summary of the going concern methods and assumptions is provided in Appendix C.

The hypothetical wind-up and solvency assumptions have been updated to reflect market conditions at the valuation date. A summary of the hypothetical wind-up and solvency methods and assumptions is provided in Appendix D.

Regulatory Environment and Actuarial Standards

There have been no changes to the Act or the relevant regulations that impact the funding of the Plan.

Subsequent Events

On September 14, 2021, the Actuarial Standards Board published a revised version of Section 3500 of the Standards of Practice on Pension Commuted Values which will be effective February 1, 2022.

The revised standards will affect implied rates of inflation used in the Standard and affirmed that the select and ultimate non-indexed rate cannot be less than zero. From the effective date, the revised standards will affect the assumptions used to value the solvency and wind-up liabilities for benefits assumed to be settled through a lump sum transfer. The financial impact of those changes will be reflected in a future actuarial valuation.

After checking with representatives of the Company, to the best of our knowledge there have been no other events subsequent to the valuation date that, in our opinion, would have a material impact on the results of the valuation as at December 31, 2021. However, since the valuation date, there have been significant fluctuations in financial markets including an increase in yields on fixed income investments and an increase in actual and expected short-term inflation, which may have led to a variation in the funded position of the Plan after the valuation date. Our valuation reflects the financial position of the Plan as of the valuation date and does not take into account any subsequent experience after the valuation date.

Impact of Case Law

This report has been prepared on the assumption that all claims on the Plan after the valuation date will be in respect of benefits payable to members of the Plan determined in accordance with the Plan terms and that all Plan assets are available to provide for these benefits. It is possible that court and regulatory decisions and changes in legislation could give rise to additional entitlements to benefits under the Plan and cause the results in this report to change. By way of example, we bring your attention to the following decisions:

- The Ontario Court of Appeal's 2003 decision in *Aegon Canada Inc. and Transamerica Life Canada versus ING Canada Inc.* restricted the use of original plan surplus where two or more pension plans were merged.
- The Supreme Court of Canada's 2004 decision in *Monsanto Canada Inc. versus Superintendent of Financial Services* upheld the requirement, with retroactive effect, to distribute surplus on partial plan wind-up under the *Pension Benefits Act (Ontario)*.

Although these decisions dealt with Ontario legislation, it is possible that they could have application to other provinces where the underlying language in the *Pension Benefits Act (Ontario)* is similar to language in the legislation of other provinces.

We are not in a position to assess the impact that such decisions or changes could have on the assumption that all plan assets on the valuation date are available to provide for benefits determined in accordance with the Plan terms. If such a claim arises subsequent to the date of this report, the consequences will be dealt with in a subsequent report. We are making no representation as to the likelihood of such a claim.

Section 3

Defined contribution component of the plan

The Plan is made up of defined contribution ("DC") and defined benefit ("DB") components. The DC component is considered in this Section. The remainder of the report relates to the DB component of the Plan, unless otherwise noted.

Current Service Cost

For the DC component of the Plan, Canadian Utilities Ltd.'s funding requirement is the employer DC current service cost. We have estimated the employer DC current service cost based on the projected payroll of participants. Our estimate, compared with the result of the previous valuation, is as follows:

	2022	2021
Estimated DC pensionable earnings that will attract an employer contribution	$458,035,000	$428,410,000
Employer DC current service cost	$27,482,000	$25,705,000

For reference, the Plan terms are summarized in Appendix F.

Section 4

Valuation results – Going concern

Financial Status

A going concern valuation compares the relationship between the value of Plan assets and the present value of expected future benefit cash flows in respect of accrued service, assuming the Plan will be maintained indefinitely.

The results of the current valuation, compared with those from the previous valuation, are summarized as follows:

	31.12.2021	31.12.2020
Assets		
Market value of assets	$2,992,864,900	$3,015,005,300
Going concern funding target		
Active members	$469,932,400	$558,312,900
Pensioners and survivors	$2,486,561,100	$2,407,498,500
Deferred pensioners and pending transfers	$17,414,200	$16,106,300
Total	$2,973,907,700	$2,981,917,700
Funding excess (shortfall)	$18,957,200	$33,087,600

The going concern funding target includes a provision for adverse deviations.

Reconciliation of Financial Status ($Millions)

Funding excess (shortfall) as at previous valuation		$33.1
Interest on funding excess (shortfall) at 2.80% per year		$0.9
Employer's special payments, with interest		$0.0
Expected funding excess (shortfall)		$34.0
Net experience gains (losses)		
• Investment return	$10.0	
• Increases in pensionable earnings	$4.0	
• Increase in YMPE	$0.6	
• Increase in maximum pension	($1.7)	
• Indexation	($23.9)	
• Mortality	($0.9)	
• Retirement	($1.1)	
• Termination	($0.0)	
Total experience gains (losses)		($13.0)
Net impact of other elements of gains and losses		($2.0)
Funding excess (shortfall) as at current valuation		$19.0

Current Service Cost

The current service cost is an estimate of the present value of the additional expected future benefit cash flows in respect of pensionable service that will accrue after the valuation date, assuming the Plan will be maintained indefinitely.

The current service cost during the year following the valuation date, compared with the corresponding values determined in the previous valuation, is as follows:

	2022	2021
Total current service cost	$8,037,900	$11,331,800
Estimated members' required contributions	($276,000)	($398,000)
Estimated employer's current service cost	$7,761,900	$10,933,800
Employees' current service cost expressed as a percentage of members' pensionable earnings	1.51%	1.62%
Employer's current service cost expressed as a percentage of members' pensionable earnings	42.51%	44.38%
Total current service cost expressed as a percentage of members' pensionable earnings	44.02%	46.00%

The key factors that have caused a change in the employer's current service cost, since the previous valuation are summarized in the following table:

Employer's current service cost as at previous valuation	44.38%
Demographic changes	(1.87)%
Employer's current service cost as at current valuation	42.51%

Discount Rate Sensitivity

The following table summarizes the effect on the going concern liabilities and current service cost shown in this report of using a discount rate that is 1% lower than that used in the valuation.

Scenario	Valuation Basis	Reduce Discount Rate by 1%
Going concern funding target	$2,973,907,700	$3,419,315,100
Current service cost		
• Total current service cost	$8,037,900	$9,755,000
• Estimated members' required contributions	($276,000)	($276,000)
Estimated employer's current service cost	$7,761,900	$9,479,000

Plausible Adverse Scenarios

The financial impact on the going concern results of plausible adverse scenarios that would pose threats to the Plan's future financial condition is presented in Appendix G.

Section 5

Valuation results – Hypothetical wind-up

Financial Position

When conducting a hypothetical wind-up valuation, we determine the relationship between the respective values of the Plan's assets and its liabilities assuming the Plan is wound up and settled on the valuation date, assuming benefits are settled in accordance with the Act and under circumstances consistent with the hypothesized scenario on the valuation date. For this purpose, we have assumed that annuities would be purchased with a fixed rate of increase of 3.0% per year, which is the maximum rate of increase under the Plan provisions.

More details on such scenario are provided in Appendix D.

The hypothetical wind-up financial position as of the valuation date, compared with that at the previous valuation, is as follows:

	31.12.201	31.12.2020
Assets		
Market value of assets	$2,992,864,900	$3,015,005,300
Termination expense provision	($2,000,000)	($2,000,000)
Wind-up assets	$2,990,864,900	$3,013,005,300
Present value of accrued benefits for:		
• Active members	$436,347,800	$550,763,800
• Pensioners and survivors	$2,871,645,800	$2,904,074,700
• Deferred pensioners	$17,347,300	$16,858,700
Total wind-up liability	$3,325,340,900	$3,471,697,200
Wind-up excess (shortfall)	($334,476,000)	($458,691,900)

Section 6
Valuation results – Solvency

Overview

The Act also requires the financial position of the Plan to be determined on a solvency basis. An alternative settlement method for solvency funding purposes was hypothesized, whereby plan benefits were modified as permitted, pursuant to Alberta Treasury Board and Finance's *Update 13-01 Alternative Settlement Methods for Hypothetical Wind-Up and Solvency Valuations*, to replace future variable inflation protection with a fixed percentage increase. Specifically, as at December 31, 2021, annuities were assumed to be purchased with a fixed rate of increase of 1.70% per year.

More details on such scenario are provided in Appendix D.

Financial Position

The financial position on a solvency basis, compared with the corresponding figures from the previous valuation, is as follows:

	31.12.2021	31.12.2020
Assets		
Market value of assets	$2,992,864,900	$3,015,005,300
Present value of going concern special payment	$0	$0
Termination expense provision	($2,000,000)	($2,000,000)
Net assets	$2,990,864,900	$3,013,005,300
Liabilities		
Total hypothetical wind-up liabilities	$3,325,340,900	$3,471,697,200
Difference in circumstances of assumed wind-up	($472,923,300)	($575,649,700)
Liabilities on a solvency basis	$2,852,417,600	$2,896,047,500
Surplus (shortfall) on a market value basis	$138,447,300	$116,957,800
Solvency ratio	104.9%	104.0%

Solvency Incremental Cost

The solvency incremental cost is an estimate of the present value of the projected change in the solvency liabilities from the valuation date until the next scheduled valuation date, adjusted for the benefit payments expected to be made in that period. The solvency incremental cost determined in this valuation, compared with the corresponding value determined in the previous valuation, is as follows:

	31.12.2021	31.12.2020
Number of years covered by report	3 years	3 years
Total solvency liabilities at the valuation date (A)	$2,852,417,600	$2,896,047,500
Present value at the valuation date of projected solvency liability at the next required valuation plus expected benefit payments until the next required valuation (B)	$2,914,448,400	$2,975,018,500
Solvency incremental cost (B – A)	$62,030,800	$78,971,000

The incremental cost is not an appropriate measure of the contributions that would be required to maintain the windup position of the Plan even if actual experience is exactly in accordance with the going concern valuation assumptions. For example, the expected return on plan assets (based on the going concern assumptions) is greater than the discount rate used to determine the solvency liabilities.

Discount Rate Sensitivity

The following table summarizes the effect on the solvency liabilities shown in this report of using a discount rate that is 1% lower than that used in the valuation:

Scenario	Valuation Basis	Reduce Discount Rate by 1%
Total solvency liability	$2,852,417,600	$3,269,938,500

Section 7
Minimum funding requirements

The Act prescribes the minimum contributions that Canadian Utilities Limited must make to the Plan. The minimum contributions in respect of a defined benefit component of a pension plan are comprised of going concern current service cost and special payments to fund any going concern or solvency shortfalls.

On the basis of the assumptions and methods described in this report, the rule for determining the minimum required employer monthly contributions, as well as an estimate of the employer contributions, from the valuation date until the next required valuation are as follows:

	Employer's contribution rule		Estimated employer's contributions
Period beginning	Monthly current service cost[2]	Minimum monthly deficiency payments	Total minimum monthly contributions
January 1, 2022	42.51%	$0	$646,800

The estimated contribution amounts above are based on projected members' pensionable earnings. If current service cost contributions are based on a percentage of members' pensionable earnings, then the actual employer's current service cost will be different from the above estimates and, as such, the contribution requirements should be monitored closely to ensure contributions are made in accordance with the Act.

Alternatively, as the Plan is closed to new employees and therefore the active membership is declining, it would be acceptable under the Act to contribute the above dollar amount of estimated employer's contributions to the Plan.

The estimated 2022 contributions to the defined contribution component of the Plan are set out in Section 3.

Other Considerations

Differences between Valuation Bases

There is no provision in the minimum funding requirements to fund the difference between the hypothetical wind-up and solvency shortfalls, if any.

In addition, although minimum funding requirements do include a requirement to fund the going concern current service cost, there is no requirement to fund the expected growth in the hypothetical wind-up or solvency liability after the valuation date, which could be greater.

[2] Expressed as a percentage of members' pensionable earnings capped at $190,470 per member.

Timing of Contributions

Funding contributions must be made within 30 days following the month to which they apply.

Retroactive Contributions

The Company must contribute the excess, if any, of the minimum contribution recommended in this report over contributions actually made in respect of the period following the valuation date. This contribution, along with an allowance for interest, is due no later than 30 days following the date this report is filed.

Payment of Benefits

The Act imposes certain restrictions on the payment of lump sums from the Plan when the solvency ratio revealed in an actuarial valuation is less than one. If the solvency ratio shown in this report is less than one, the plan administrator should ensure that the monthly special payments are sufficient to meet the requirements of the Act to allow for the full payment of benefits, and otherwise should take the prescribed actions.

Specifically, pursuant to the Act, transfers out of the Plan may only be made in full provided an amount equal to the transfer deficiency has been remitted to the pension fund in addition to the minimum special payments.

Section 8

Maximum eligible contributions

The *Income Tax Act* (the "ITA") limits the amount of employer contributions that can be remitted to the defined benefit component of a registered pension plan.

In accordance with Section 147.2 of the ITA and *Income Tax Regulation* 8516, for a plan that is underfunded on either a going concern or on a hypothetical wind-up basis, the maximum permitted contributions are equal to the employer's current service cost, including the explicit expense allowance if applicable, plus the greater of the going concern funding shortfall and hypothetical wind-up shortfall.

For a plan that is fully funded on both going concern and hypothetical wind-up bases, the employer can remit a contribution equal to the employer's current service cost, including the explicit expense allowance if applicable, as long as the surplus in the plan does not exceed a prescribed threshold. Specifically, in accordance with Section 147.2 of the ITA, for a plan that is fully funded on both going concern and hypothetical wind-up bases, the plan may not retain its registered status if the employer makes a contribution while the going concern funding excess exceeds 25% of the going concern funding target.

Notwithstanding the above, any contributions that are required to be made in accordance with pension benefits legislation are eligible contributions in accordance with Section 147.2 of the ITA and can be remitted.

Schedule of Maximum Contributions

Since the surplus does not exceed 25% of the going concern funding target, the Company may make monthly contributions of up to 42.51% of members' pensionable earnings, calculated on a going concern basis, until the next valuation. The monthly amount is estimated at $646,800 as shown in Section 7.

The Company could elect to contribute the service cost on a plan termination basis instead of the going concern service cost. For example, based on the scenario in Section 6, the maximum employer contribution for the period to December 31, 2024 is the three year solvency incremental cost of $62,030,800.

The estimated 2022 contributions to the defined contribution component of the plan are set out in Section 3.

Section 9

Actuarial opinion

In my opinion, for the purposes of the valuations,

- The membership data on which the valuation is based are sufficient and reliable;
- The assumptions are appropriate.
- The methods employed in the valuation are appropriate.

This report has been prepared, and my opinion given, in accordance with accepted actuarial practice in Canada. It has also been prepared in accordance with the funding and solvency standards set by the Alberta *Employment Pension Plans Act.*



Mark Greenwood
FCIA, FIA

August 8, 2022
Date

Appendix A
Prescribed disclosure

Definitions

The Act defines a number of terms as follows:

Defined Term	Description	Result
Going Concern Assets Value	The value of the assets of a plan as of the relevant review date, determined on the basis of a going concern valuation.	$2,992,864,900
Going Concern Liabilities Value	The actuarial present value of a plan's benefits as of the relevant review date, determined on the basis of a going concern valuation.	$2,973,907,700
Unfunded Liability	The amount, if any, by which a plan's going concern liabilities value exceed its going concern assets value.	$0
Going Concern Funded Ratio	The fraction obtained by dividing the Going Concern Assets Value by the Going Concern Liabilities Value	1.0064
Accessible Going Concern Excess	The amount, if any, by which a plan's Going Concern Assets Value exceed 105% of its Going Concern Liabilities Value.	$0
Solvency Asset Value	The value of the plan's assets determined on a plan termination basis including any cash balances and accrued and receivable income and reduced by the actuary's estimate of the expenses that would be incurred in winding-up the plan.	$2,990,864,900
Solvency Liabilities Value	The liabilities of the plan calculated on a plan termination basis.	$2,852,417,600
Solvency Asset Adjustment	The sum of	
	i. the face amount of any prescribed letters of credit.	$0
	ii. the present value of special payments sufficient to amortize the unfunded liability due over the next five years, and	$0
		$0
Solvency Ratio	The fraction obtained by dividing:	1.0485
	(a) the Solvency Asset Value, and	$2,990,864,900
	(b) the Solvency Liabilities Value.	$2,852,417,600
Solvency Deficiency	The amount, if any, by which:	
	(a) the Solvency Liabilities Value	$2,852,417,600
	exceed the sum of:	
	(a) the Solvency Asset Value, and	$2,990,864,900
	(b) the Solvency Asset Adjustment.	$0
		$0

Defined Term	Description	Result
Accessible Solvency Excess	The amount, if any, by which a plan's Solvency Asset Value exceed 105% of its Solvency Liabilities Value.	$0
Special Payments	A monthly special payment established to amortize an unfunded liability is hereafter referred to as an unfunded liability special payment.	$0
	A monthly special payment established to amortize a solvency deficiency is hereafter referred to as a solvency special payment.	$0

Timing of Next Required Valuation

In accordance with the Act and the Superintendent's Directives, an actuarial report must be prepared at intervals not exceeding three years. The Superintendent also directs that the plan administrator file actuarial reports annually if the going concern funded ratio of the plan is less than 85%. Triennial filings may resume with the filing of a report showing that the going concern funded ratio is at least 85%.

Accordingly, the next valuation of the Plan will be required as of December 31, 2024.

Special Payments

Going Concern Basis

No unfunded liability special payments are required.

Solvency Basis

No solvency special payments are required.

Appendix B
Plan assets

The pension fund is held by Northern Trust. In preparing this report, we have relied upon the fund statements prepared by Northern Trust without further audit. Customarily, this information would not be verified by a plan's actuary. We have reviewed the information for internal consistency and we have no reason to doubt its substantial accuracy.

Reconciliation of Market Value of Plan Assets

The pension fund transactions since the last valuation are summarized in the following table:

	2021
January 1	$3,015,005,339
PLUS	
Members' contributions	$578,586
Company's contributions	$10,958,750
Investment earnings	$86,406,797
Net capital gain (loss)	$18,104,588
	$116,048,720
LESS	
Pensions paid	$125,429,006
Lump-sums paid	$1,066,310
Administration and investment fees	$11,693,843
	$138,189,159
December 31	$2,992,864,900
Gross rate of return[3]	3.48%
Rate of return net of expenses[3]	3.08%

We have tested the pensions paid, the lump-sums paid, and the contributions for consistency with the membership data for the Plan members who have received benefits or made contributions. The results of these tests were satisfactory.

Investment Policy

The plan administrator has adopted a statement of investment policy and procedures. This policy is intended to provide guidelines for the manager(s) as to the level of risk that is consistent with the Plan's investment objectives. A significant component of this investment policy is the asset mix.

[3] Assuming mid-period cash flows.

The plan administrator is solely responsible for selecting the Plan's investment policies, asset allocations, and individual investments.

The constraints on the asset mix and the actual asset mix at the valuation date are provided for information purposes:

	Investment Policy			Actual asset Mix as at 31.12.2021
	Minimum	Target	Maximum	
Canadian Fixed Income	40.0%	61.0%	80.0%	83.2%
Global Fixed Income	10.0%	19.0%	35.0%	
Real Estate	0.0%	9.0%	10.0%	7.7%
Global Equity	0.0%	11.0%	40.0%	7.8%
Cash and cash equivalents	-	-	-	1.3%
		100%		100%

Appendix C
Methods and assumptions – Going concern

Valuation of Assets

For this valuation, we have used the market value of assets.

Going Concern Funding Target

Over time, the real cost to the employer of a pension plan is the excess of benefits and expenses over member contributions, if any, and investment earnings. The actuarial cost method allocates this cost to annual time periods.

For purposes of the going concern valuation, we have continued to use the projected unit credit actuarial cost method. Under this method, we determine the present value of benefit cash flows expected to be paid in respect of service accrued prior to the valuation date, based on projected final average earnings. This is referred to as the funding target.

The funding excess or funding shortfall, as the case may be, is the difference between the market or smoothed value of assets and the funding target. A funding excess on a market value basis indicates that the current market value of assets and expected investment earnings are expected to be sufficient to meet the cash flows in respect of benefits accrued to the valuation date as well as expected expenses – assuming the plan is maintained indefinitely. A funding shortfall on a market value basis indicates the opposite – that the current market value of the assets is not expected to be sufficient to meet the plan's cash flow requirements in respect of accrued benefits, absent additional contributions.

As required under the Act, a funding shortfall including the provision for adverse deviations must be amortized over no more than 15 years through special payments. A funding excess may, from an actuarial standpoint, be applied immediately to reduce required employer current service contributions unless precluded by the terms of the plan or by legislation.

The actuarial cost method used for the purposes of this valuation produces a reasonable matching of contributions with accruing benefits. Because benefits are recognized as they accrue, the actuarial cost method provides an effective funding target for a plan that is maintained indefinitely.

Current Service Cost

The current service cost is the present value of projected benefits to be paid under the plan with respect to service expected to accrue during the period until the next valuation.

The employer's current service cost is the total current service cost reduced by the members' required contributions.

The employer's current service cost has been expressed as a percentage of the members' pensionable earnings to provide an automatic adjustment in the event of fluctuations in membership and/or pensionable earnings.

Under the projected unit credit actuarial cost method, the current service cost for an individual member will increase each year as the member approaches retirement. As the DB component is closed to new members, the current service cost for DB members, expressed as a percentage of the members' pensionable earnings, can be expected to increase as the average age increases.

Actuarial Assumptions – Going Concern Basis

The present value of future benefit payment cash flows is based on economic and demographic assumptions. At each valuation we determine whether, in our opinion, the actuarial assumptions are still appropriate for the purposes of the valuation, and we revise them, if necessary. Emerging experience will result in gains or losses that will be revealed and considered in future actuarial valuations.

The table below shows the various assumptions used in the current valuation in comparison with those used in the previous valuation.

Assumption	Current valuation	Previous valuation
Discount rate:	2.80%	2.80%
Inflation:	2.00%	2.00%
ITA limit / YMPE increases:	2.25%	2.25%
Pensionable earnings increases:	2.50% (plus Merit and promotion)	2.50% (plus Merit and promotion)
Post-retirement pension increases:	1.85%	1.85%
Retirement rates:	Retirement occurs when age and service sum to 90 years, but not after age 65 or before 55	Retirement occurs when age and service sum to 90 years, but not after age 65 or before 55
Termination rates:	None	None
Mortality rates:	95% of the rates of the 2014 Private Sector Canadian Pensioners Mortality Table (CPM2014Priv)	95% of the rates of the 2014 Private Sector Canadian Pensioners Mortality Table (CPM2014Priv)
Mortality improvements:	Fully generational using CPM Improvement Scale B (CPM-B)	Fully generational using CPM Improvement Scale B (CPM-B)
Disability rates:	None	None
Eligible spouse at retirement:	Based on current marital status	Based on current marital status
Spousal age difference:	Male 3 years older	Male 3 years older

The assumptions are best estimate with the exception that the discount rate includes a margin for adverse deviations, as shown below.

Age-Related Tables

Sample rates from the age-related tables are summarized in the following table:

Age	Merit and promotion
20	13.65%
25	6.02%
30	3.08%
35	1.75%
40	1.07%
45	0.70%
50	0.47%
55	0.33%

Pensionable Earnings

The benefits ultimately paid will depend on each member's final average earnings. To calculate the pension benefits payable upon retirement or death, we have taken 2021 earnings and assumed that such pensionable earnings will increase at the assumed rate.

Rationale for Assumptions

A rationale for each of the assumptions used in the current valuation is provided below.

Discount Rate

We have discounted the expected benefit payment cash flows using the expected investment return on the market value of the fund net of fees and less a margin for adverse deviations.

The discount rate is comprised of the following:

- An **assumed investment return** based on estimated returns for each major asset class that are consistent with market conditions on the valuation date modified to include a provision for increases in market interest rates to a level higher than current historically low levels, on the expected time horizon over which benefits are expected to be paid, and on the target asset mix specified in the Plan's investment policy. Consistent with market observable and available data, the assumed investment return is a gross return for all asset classes except for alternative investments for which it would normally be net of any investment management expense. The assumed investment return includes the diversification and rebalancing effect.
- An **assumed passive investment management expense provision** which represents the hypothetical fees for passive investment management of assets based on estimated fees charged by index managers for balanced mandates.

- An **active investment management expense provision** of 28 bps. We have assumed that these fees would be offset by an equivalent **additional return resulting from active investment management**.
- An **implicit non-investment management expense provision** determined as the average rate of non-investment expenses paid from the fund over the last three years. These would include all fees payable from the fund (administration, custodial, audit, consulting, etc.) except those payable to investment managers, to the extent that these fees are not covered in an explicit provision for expenses added to the current service cost.
- A **margin for adverse deviations** of 0.30% as per the terms of engagement.

The discount rate was developed as follows:

Assumed investment return	3.15%
Additional returns for active investment management	0.28%
Active investment management expense provision	(0.28%)
Assumed passive investment management expense provision	(0.02%)
Implicit non-investment management expense provision	(0.08%)
Margin for adverse deviations	(0.30%)
Net discount rate (rounded up to nearest 0.1%)	2.80%

Inflation

The inflation assumption is based on the mid-point of the Bank of Canada's inflation target range of between 1% and 3%.

Income Tax Act Pension Limit and Year's Maximum Pensionable Earnings

The assumption is based on historical real economic growth and the underlying inflation assumption.

Pensionable Earnings

The assumption is based on a best estimate of future merit and promotional increases and general wage growth considering current economic and financial market conditions. The assumption takes into account the Company's current outlook for wage growth in the utility sector. Such merit and promotion increases are assumed to be in accordance with the table developed based on an experience study considering increases over the years 1985 to 1992 and which has continued to be reasonably predictive of merit and promotion increases experienced since that time.

Post-Retirement Pension Increases

The assumption is based on the Plan formula and inflation assumption above, considering that the Plan limits pension increases to 3% in the event that inflation exceeds 3%. We have determined the impact of this cap by performing a stochastic analysis based on trials using a mean of 2.0% and a standard deviation of 1.5%.

Retirement Rates

For this valuation we have continued to assume that active members will retire when their age and service sum to 90 years, provided that retirement does not occur after 65 or before 55. Individuals who have already attained this condition are assumed to retire immediately. This assumption is based on the Plan provisions and the experience of the Plan in recent years.

Retirement earlier than assumed may result in losses to the Plan, while later retirements may result in gains to the Plan. These gains and losses will be revealed in subsequent valuations.

Termination Rates

Use of a different assumption would not have a material impact on the valuation.

Mortality Rates

The assumption for the mortality rates is based on the Canadian Pensioners' Mortality (CPM) study published by the Canadian Institute of Actuaries in February 2014. Considering the characteristics of the group, it was considered appropriate to use the CPM mortality rates from the private sector as a reference table.

The mortality rates selected reflect plan-specific experience over the years 2005 to 2014. However, due to the size of the Plan, this mortality experience is not fully credible. The CPM mortality rates from the private sector have been adjusted after considering the plan-specific experience and characteristics, such as the type of employment, the industry experience, the pension and employment income for the plan members, and data in the CPM study.

There is broad consensus among actuaries and other longevity experts that mortality improvement will continue in the future, but the degree of future mortality improvement is uncertain. Two mortality improvement scales published by the Canadian Institute of Actuaries (CIA) are generally adopted for Canadian pension valuations:

- The Canadian Pensioners Mortality (CPM) study published in February 2014 included CPM Improvement Scale B (CPM-B).
- A report released by the Task Force on Mortality Improvement on September 20, 2017 included an analysis of the rate of mortality improvement for the Canadian population and provides for mortality improvement scale MI-2017 to be considered for the purpose of reflecting future mortality improvement in Canadian actuarial work, while acknowledging that it might be appropriate to use alternative mortality improvement assumptions to reflect the nature of the work.

The CIA Committee on Pension Plan Financial Reporting published a revised version of the Educational Note on the Selection of Mortality Assumptions for Pension Plan Valuations on December 21, 2017. The Educational Note indicated that given the recent publication of the CPM-B and MI-2017 improvement scales and the similar data sets used in their development, it may be appropriate to use either scale in the absence of credible information to the contrary, such as the publication of a successor scale by the CIA.

COVID-19 has impacted mortality rates globally. Statistics Canada reported excess mortality in 2020 and 2021 for the general Canadian population and other peer countries globally have also seen excess mortality over the course of the pandemic. Mortality experience for the plan has been reflected up to the date of the valuation. We have not adjusted the expected mortality rates for Plan members after the valuation date. The long-term implications of the pandemic on mortality rates is unclear as at the date of this report. Credible plan specific experience and relevant broader observed mortality trends after the report date will be reflected in future valuations.

For the current valuation, we have continued to use the CPM-B scale, which is a reasonable outlook for future mortality improvement.

Based on the assumption used, the life expectancy of a member age 65 at the valuation date is 22.3 years for males and 24.7 years for females.

Disability Rates

Use of a different assumption would not have a material impact on the valuation.

Eligible Spouse

The assumption is based on actual membership data, which we believe is the most reliable source.

Spousal Age Difference

The assumption is based on an industry standard showing males are typically 3 years older than their spouse.

Appendix D
Methods and assumptions – Hypothetical wind-up and solvency

Hypothetical Wind-up Basis

The Canadian Institute of Actuaries requires actuaries to report the financial position of a pension plan on the assumption that the plan is wound up on the effective date of the valuation, with benefits determined on the assumption that the pension plan has neither a surplus nor a deficit.

To determine the actuarial liability on the hypothetical wind-up basis, we have valued those benefits that would have been paid had the Plan been wound up on the valuation date, with all members fully vested in their accrued benefits.

The Standards of Practice of the Canadian Institute of Actuaries require that the scenario upon which the hypothetical wind-up valuation is based be postulated. However, there are no benefits under the Plan contingent upon the circumstances of the plan wind-up or contingent upon other factors. Therefore, it was not necessary to postulate a scenario upon which the hypothetical wind-up valuation is made. No benefits payable on plan wind-up were excluded from our calculations. The plan wind-up is assumed to occur in circumstances that maximize the actuarial liability.

Upon plan wind-up, members are given options for the method of settling their benefit entitlements. The options vary by eligibility and by province of employment, but in general, involve either a lump sum transfer or an immediate or deferred pension.

The value of benefits assumed to be settled through a lump sum transfer is based on the assumptions described in Section 3500 – *Pension Commuted Values* of the Canadian Institute of Actuaries' Standards of Practice applicable for December 31, 2021.

Benefits provided as an immediate or deferred pension are assumed to be settled through the purchase of annuities based on an estimate of the cost of purchasing annuities.

We have estimated the cost of settlement through purchase of annuities in accordance with the *Canadian Institute of Actuaries Educational Note: Assumptions for Hypothetical Wind-up and Solvency Valuations with Effective Dates on and after December 31, 2021 and no later than December 30, 2022 (the "Educational Note").*

An alternative settlement method was hypothesized for solvency purposes, whereby plan benefits were modified, as permitted, pursuant to Alberta Treasury Board and Finance's *Update 13-01 Alternative Settlement Methods for Hypothetical Wind-Up and Solvency Valuations* ("Update 13-01"). Annuities are assumed to be purchased with future variable inflation protection replaced with a fixed percentage increase determined in accordance with Update 13-01.

However, it may not be possible to settle the liabilities through the purchase of annuities due to the size of the Plan and the limited annuity market in Canada. In accordance with the Educational Note, we have assumed that the settlement of such liabilities would be priced on the same basis as the smaller group annuities that are available in the market.

The Educational Note provides guidance on estimating the cost of annuity purchases assuming a typical group of annuitants. That is, no adjustments for sub- or super-standard mortality are considered. However, it is expected that insurers will consider plan experience and certain plan-specific characteristics when determining the mortality basis for a particular group. The Educational Note states that the actuary would be expected to make an adjustment to the regular annuity purchase assumptions where there is demonstrated substandard or super-standard mortality or where an insurer might be expected to assume so. In such cases, the actuary would be expected to make an adjustment to the mortality assumption in a manner consistent with the underlying annuity purchase basis. Given the uncertainty surrounding the actual mortality basis that would be typical of a group annuity purchase, it is reasonable to assume that there is a range of bases that can be expected not to be materially different from the actual mortality basis. Therefore, an adjustment to the regular annuity purchase assumptions would be warranted when the plan's assumed basis falls outside that range. In this context, we have determined that no adjustment to the mortality rates used in the regular annuity purchase assumptions is required.

Interest rate assumptions net of COLA used for lump sum transfers and annuity purchases take into consideration the 3% cap on pension increases provided by the plan provisions. We have carried out a stochastic analysis in order to determine the additional net interest rate as a result of this 3% cap.

We have not included a margin for adverse deviations in the solvency and hypothetical wind-up valuations.

The assumptions are as follows:

Form of Benefit Settlement Elected by Member	
Lump sum:	70% of active members under age 55, and 50% of active members over age 55, elect to receive their benefit entitlement in a lump sum
Annuity purchase:	All remaining members are assumed to elect to receive their benefit entitlement in the form of a deferred or immediate pension. These benefits are assumed to be settled through the purchase of deferred or immediate annuities from a life insurance company.
Basis for Benefits Assumed to be Settled through a Lump Sum	
Mortality rates:	100% of the rates of the 2014 Canadian Pensioners Mortality Table (CPM2014) with fully generational improvements using CPM Scale B
Interest rate:	2.30% per year for 10 years, 3.40% per year thereafter.
COLA	1.48% per year for 10 years, 1.96% per year thereafter
Interest rate net of COLA	0.81% per year for 10 years, 1.41% per year thereafter

Basis for Benefits Assumed to be Settled through the Purchase of an Annuity	
Mortality rates:	100% of the rates of the 2014 Canadian Pensioners Mortality Table (CPM2014) with fully generational improvements using CPM Scale B
Adjustment to mortality rates:	No adjustment
Interest rate:	2.86% per year based on a duration of 12.65 years determined for the liabilities assumed to be settled through the purchase of an annuity.
COLA	1.70% per year[4]
Interest rate net of COLA	1.14% per year
Retirement Age	
Benefits assumed to be payable through a lump sum:	Members are assumed to retire with a 50% probability at the age that maximizes the value of their entitlement from the Plan and a 50% probability at the member's earliest unreduced age in accordance with applicable legislation and based on the eligibility requirements that have been met at the valuation date
Benefits assumed to be settled through the purchase of an annuity:	Members are assumed to retire at the age that maximizes the value of their entitlement from the Plan, based on the eligibility requirements that have been met at the valuation date
Other Assumptions	
Final average earnings:	Based on actual pensionable earnings over the averaging period
Family composition:	Same as for going concern valuation
Termination expenses:	$2,000,000

To determine the hypothetical wind-up position of the Plan, a provision has been made for estimated termination expenses payable from the Plan's assets in respect of actuarial and administration expenses that may reasonably be expected to be incurred in terminating the Plan and to be charged to the Plan.

Because the settlement of all benefits on wind-up is assumed to occur on the valuation date and is assumed to be uncontested, the provision for termination expenses does not include custodial, investment management, auditing, consulting, and legal expenses that would be incurred between the wind-up date and the settlement date or due to the terms of a wind-up being contested.

Expenses associated with the distribution of any surplus assets that might arise on an actual wind-up are also not included in the estimated termination expense provisions.

[4] For the hypothetical wind-up scenario, it is assumed that annuities would be purchased with a fixed rate of interest of 3.0% per year, which is the maximum rate of increase under the Plan provisions.

In determining the provision for termination expenses payable from the Plan's assets, we have assumed that the plan sponsor would be solvent on the wind-up date. We have also assumed, without analysis, that the Plan's terms as well as applicable legislation and court decisions would permit the relevant expenses to be paid from the Plan.

Although the termination expense assumption is a best estimate, actual fees incurred on an actual plan wind-up may differ materially from the estimates disclosed in this report.

Incremental Cost

In order to determine the incremental cost, we estimate the solvency liabilities at the next valuation date. We have assumed that the cost of settling benefits by way of a lump sum or purchasing annuities remains consistent with the assumptions described above. Since the projected solvency liabilities will depend on the membership in the Plan at the next valuation date, we must make assumptions about how the Plan membership will evolve over the period until the next valuation.

We have assumed that the Plan membership will evolve in a manner consistent with the going concern assumptions as follows:

- Members terminate, retire, and die consistent with the termination, retirement, and mortality rates used for the going concern valuation.
- Pensionable earnings, the Income Tax Act pension limit, and the Year's Maximum Pensionable Earnings increase in accordance with the related going concern assumptions.
- Active members accrue pensionable service in accordance with the terms of the Plan.
- Cost of living adjustments are consistent with the inflation assumption used for the going concern valuation.

Appendix E
Membership data

Analysis of Membership Data

The actuarial valuation is based on membership data as at December 31, 2021, provided by Canadian Utilities Limited.

We have applied tests for internal consistency, as well as for consistency with the data used for the previous valuation. These tests were applied to membership reconciliation, basic information (date of birth, date of hire, date of membership, gender, etc.), pensionable earnings, credited service, contributions accumulated with interest, and pensions to retirees and other members entitled to a deferred pension. Contributions, lump sum payments, and pensions to retirees were compared with corresponding amounts reported in financial statements. The results of these tests were satisfactory.

If the data supplied are not sufficient and reliable for its intended purpose, the results of our calculation may differ significantly from the results that would be obtained with such data. Although Mercer has reviewed the suitability of the data for its intended use in accordance with accepted actuarial practice in Canada, Mercer has not verified or audited any of the data or information provided.

Plan membership data are summarized below. For comparison, we have also summarized corresponding data from the previous valuation.

	31.12.2021	31.12.2020
Active Members Accruing DB Benefits		
Number	280	344
Total pensionable earnings for prior year	$35,236,851	$43,021,123
Average pensionable earnings for prior year	$125,846	$125,061
Average years of pensionable service	31.4	30.6
Average age	57.5	57.2
Active Members with DB Benefits, but Accruing DC		
Number	23	24
Total pensionable earnings for prior year	$3,560,189	$3,631,384
Average pensionable earnings for prior year	$154,791	$151,308
Average years of pensionable service	7.3	7.2
Average age	55.8	55.1
Active Members with DC Benefits Only		
Number	4,059	3,823
Total pensionable earnings for prior year	$440,504,595	$411,669,259
Average pensionable earnings for prior year	$108,525	$107,682
Average age	42.3	42.1

	31.12.2021	31.12.2020
Deferred Pensioners		
Number	55	60
Total annual pension	$904,231	$946,356
Average annual pension	$16,441	$15,773
Average age	58.8	58.3
Pensioners and Survivors		
Number	2,761	2,747
Total annual lifetime pension	$129,695,423	$123,349,289
Average annual lifetime pension	$46,974	$44,903
Average age	72.3	72.0

The membership movement for all categories of membership since the previous actuarial valuation is as follows:

	Active members accruing DB Benefits	Active members with DB Benefits accruing DC Benefits	Deferred Pensioners	Pensioners and survivors	Total
Total at 31.12.2020	344	24	60	2,747	3,175
New entrants					
Terminations:					
• Transfers/lump sums			(1)		(1)
• Pending transfers					
• Deferred pensions	(1)		1		
Deaths	(4)			(82)	(86)
Retirements	(59)	(1)	(5)	65	
Beneficiaries				29	29
Adjustments				2	2
Total at 31.12.2021	280	23	55	2,761	3,119

The distribution of the active members by age and pensionable service as at the valuation date is summarized as follows:

	Years of Pensionable Service									
Age	0-4	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
45 to 49					1	5				6
50 to 54					2	25	37	3		67
55 to 59				1		47	73	24		145
60 to 64		1			1	14	23	11	11	61
65 +						1				1
Total		1		1	4	92	133	38	11	280

The distribution of the inactive members by age as at the valuation date is summarized as follows:

	Deferred Pensioners		Pensioners and Survivors	
Age	Number	Average Pension	Number	Average Pension
40 – 44			1	*
45 – 49	1	*		
50 – 54	7	$10,489	5	$42,891
55 – 59	27	$17,314	146	$65,314
60 – 64	19	$16,459	593	$65,451
65 – 69	1	*	609	$52,930
70 – 74			467	$42,948
75 – 79			320	$33,035
80 – 84			236	$29,661
85 – 89			228	$31,038
90 – 94			126	$28,308
95+			30	$19,190
Total	55	$16,441	2,761	$46,974

*Information supressed to preserve member confidentiality.

Appendix F
Summary of plan provisions

Mercer has used and relied on the plan documents, including amendments and interpretations of plan provisions, supplied by Canadian Utilities Limited. If any plan provisions supplied are not accurate and complete, the results of any calculation may differ significantly from the results that would be obtained with accurate and complete information. Moreover, plan documents may be susceptible to different interpretations, each of which could be reasonable, and the results of estimates under each of the different interpretations could vary.

This valuation is based on the plan provisions in effect on December 31, 2021. The Plan has not been amended since the date of previous valuation. There were no changes that had a material impact on the cost of the benefits provided by the Plan.

DB Component

The following is a summary of the main provisions of the DB component of the Plan in effect on December 31, 2021. This summary is not intended as a complete description of the Plan.

Background	Plan 1 members: • The Plan became effective January 2, 1962. On December 31, 1986, employees in the Yukon Territory and the Northwest Territories became covered by a separate arrangement. • Effective January 1, 1997, money purchase provisions were introduced into Plan 1, at which time existing Plan members had an option to continue to accrue benefits under the defined benefit component or participate in the new money purchase component. All new employees participate only in the money purchase component. Former Plan 2 members: • The Predecessor Plan was effective January 2, 1962. On December 31, 1986 the Predecessor Plan was split into three parts, covering employees in the Yukon (Plan 2), the Northwest Territories (Plan 3) and elsewhere (Plan 1). Plan 2A was established effective April 1, 1987 to cover Yukon based employees who had previously been employed by the Northern Canada Power Commission (NCPC). • Effective January 1, 1994, Plan 2 was amended to extend coverage to all current and former members of Plan 2A and Plan 3. Service under Plan 2A and Plan 3 were assumed by Plan 2 in exchange for a transfer of assets. • Effective December 30, 2003, the Plan was extended to cover employees located in Ontario. Effective January 1, 2015, Plan 2 was merged with Plan 1.

Eligibility for Membership	Plan 1 members: • The Plan covers salaried employees employed in Canada outside of Ontario, the Yukon and Northwest Territories upon appointment to permanent staff. This typically occurs after 6 months service. In the event that a salaried employee is not appointed to permanent staff earlier, participation in the Plan will commence upon completion of two years' service provided earnings exceed 35% of the YMPE in two consecutive calendar years. • Participation in the Plan is compulsory for all eligible employees who are not participating in another registered pension plan of the employer. Former Plan 2 members: • The Plan is closed to new entrants. • Some individuals who were employed by NCPC immediately prior to April 1, 1987 elected to have their pension benefit entitlements under the PSSA transferred to the Plan. For these members, pensionable service under the Plan includes service that was pensionable under the PSSA. Service with NCPC counts for determination of vested rights whether or not the individual member elected to transfer his PSSA benefit entitlements to the Plan.
Employee Contributions	Members contribute 2.8% of earnings up to the YMPE and 4.0% of earnings over the YMPE, up to an annual maximum contribution of $2,000. Disabled members and certain executive members are not required to contribute.
Retirement Dates	Normal Retirement Date • The normal retirement date is the first day of the month following the member's 65th birthday. Early Retirement Date • The member may choose to retire as early as age 55
Postponed Retirement	A member who remains employed with the company after age 65 may elect to commence receipt of pension or continue to accrue benefits under the Plan up to his actual retirement.
Normal Retirement Pension	2% of annual final average earnings times years of pensionable service between January 2, 1962 and January 2, 1966; PLUS 1.4% of annual final average earnings up to the YMPE, times years of pensionable service after January 2, 1966; PLUS 2.0% of annual final average earnings in excess of the YMPE, times years of pensionable service after January 2, 1966.
Pensionable Earnings	Annual final average earnings are calculated over the 60 consecutive months for which earnings are highest. The YMPE is calculated over the same period.

Early Retirement Pension

If a member retires from active service with the consent of the Company, a reduced early retirement benefit is payable, as follows:

- If age and service sum to 90 years or more, no reduction applies;
- otherwise, the pension payable is equal to the normal retirement pension times a percentage from the following table:

Age at Retirement	Percentage
64	100
63	100
62	100
61	97
60	94
59	88
58	82
57	76
56	70
55	64

If retirement is not from active service, or if Company consent is not obtained, an actuarial reduction applies.

In addition, female participants employed prior to June 1, 1972 are entitled to a bridge benefit payable only until age 65. The bridge benefit is equal to the expected Canada pension Plan benefit times the ratio of 36 divided by the number of months from retirement to age 65, provided that the ratio is never more than 1.

Maximum Pension

The Plan provides that the pension payable at the time of commencement must not exceed the defined benefit limit prescribed under the Income Tax Act, multiplied by years of pensionable service (with service rendered prior to January 1, 1992 limited to 35 years).

Reductions to this maximum apply if retirement occurs before age 60, before completion of 30 years' service, and before attainment of age and service summing to 80. The maximum provision automatically reflects any increases to the defined benefit limit that occur in the Income Tax Act and Regulations.

Cost of Living Adjustments

The annual adjustment will be as determined by the Company but will not exceed 3% per annum. In calculating the annual adjustment the Company will take into consideration annual percentage changes in the Consumer Price Index for Canada and any previous annual adjustments paid. The annual adjustment is granted only to members who retire from active service.

Death Benefits	Pre-retirement: • If a member dies before becoming eligible for retirement, the member's spouse, or the member's beneficiary if there is no surviving spouse, will receive a benefit equal in value to the commuted value of the benefit to which the member would have been entitled had he terminated employment immediately prior to his death, plus any excess of the member's contributions over 50% of that commuted value. • If a member dies after becoming eligible for retirement, the member's spouse will receive the greater of: - a benefit equal in value to the commuted value of the benefit to which the member would have been entitled had he terminated employment immediately prior to his death, plus any excess of the member's contributions over 50% of that commuted value, and - an immediate pension equal to 60% of the pension to which the member would have been entitled had the member retired on their date of death. This pension will also receive future cost of living increases. • If a member dies after becoming eligible for retirement and there is no surviving spouse, the beneficiary will receive the commuted value of the benefit to which the member would have been entitled had he terminated employment immediately prior to his death, plus any excess of the member's contributions over 50% of that commuted value. Post retirement: • The normal form of pension for single employees guarantees a return of the member's own contributions with interest up to retirement date. • For employees with an eligible spouse, the normal form of pension provides a continuing survivorship pension to the member's spouse. If retirement occurs prior to July 1, 1987, the spouse's benefit is 50% of the member's benefit. If retirement occurs after July 1, 1987 the spouse's benefit is 60%.
Termination Benefits	A deferred pension commencing at normal retirement date, or alternatively the commuted value thereof may be transferred to the member's locked-in RRSP. If the member's own contributions exceed 50% of the commuted value of the deferred pension, the excess is available as an additional benefit.

DC Component

The following is a summary of the main provisions of the DC component of the Plan in effect on December 31, 2021. This summary is not intended as a complete description of the Plan.

Background	The DC component of the Plan became effective January 1, 1997. Employer and employee contributions are remitted to individual member accounts and are credited with interest.
Eligibility for Membership	An employee must join the Defined Contribution component of the Plan on the date the member is appointed to the permanent staff of Canadian Utilities Limited.
Employee Contributions	The lesser of 4% of member's pensionable earnings and 40% of the maximum contribution limit. Required contributions for Executive Officers and disabled members are made on their behalf by the Employer.
Employer Contributions	The lesser of 10% of member's pensionable earnings and maximum contribution limit reduced by the amount paid by the member.
Benefits	Members receive the balance of their individual employer and employee accounts upon termination, death or retirement.
Maximum Contribution	The employer and employee contributions are limited to the amounts under the *Income Tax Act.*
Pensionable Earnings	Base salary.

Appendix G
Plausible adverse scenarios

In this Appendix, the financial impact on the Plan's going concern results (i.e., going concern financial position at the valuation date and current service cost from the valuation date to the next valuation date) of plausible adverse scenarios that would pose threats to the Plan's future financial condition is summarized in the following tables for the following risks:

- Interest rate risk - an immediate parallel decrease in market interest rates of 110 basis points;
- Deterioration of asset values - an immediate decrease of 15% in the market value of non-fixed income assets; and
- Longevity risk - that life expectancy from the valuation date at age 65 for a male and a female would increase by 1.6 years and 1.4 years, respectively.

Scenario	Going Concern Valuation Results as at December 31, 2021	Plausible Adverse Scenario Results as at December 31, 2021		
		Interest Rate Risk	Deterioration of Asset Values	Longevity Risk
Going Concern Financial Status				
Market value of assets	$2,992,864,900	$3,322,080,000	$2,903,079,000	$2,992,864,900
Going concern funding target	$2,973,907,700	$3,370,237,300	$2,973,907,700	$3,130,949,800
Funding excess (shortfall)	$18,957,200	($48,157,300)	($70,828,700)	($138,084,900)
Estimated Employer's Current Service Cost expressed as a percentage of Members' Pensionable Earnings				
From January 1, 2022	42.51%	50.86%	42.51%	45.30%

The balance of this Appendix provides details of the plausible adverse scenarios selected and the determination of their impact on valuation results.

Interest Rate Risk

The purpose of this scenario is to illustrate the sensitivity of the Plan's valuation results to the potential that interest rates will be lower than expected. For this purpose, we have assumed an immediate parallel decrease in market interest rates underlying fixed income investments, where fixed income investments include Canadian and Global Fixed Income, as shown in the investment policy summarized in Appendix B.

Using a methodology consistent with the one used to determine the going concern discount rate, we have determined that a parallel decrease in market interest rates of 110 basis points would have a non-trivial probability (between 1 in 10 and 1 in 20) of occurring within the year following the valuation date. For purpose of this scenario, we have assumed that such a decrease in market interest rates would occur immediately on the valuation date and would have the following impact on the value of assets and going concern assumptions:

Defined Term	Description
Market value of assets	The decrease in market interest rates has been assumed to affect only the market value of the fixed income investments. The decrease is assumed to have occurred immediately on the valuation date.
Discount rate assumption	It was assumed that the decrease in market interest rates affects only the expected return on assets for the fixed income portion of assets. The same margin for adverse deviations was used. The discount rate assumption was therefore decreased from 2.80% to 1.90%.
Other assumptions	Except as mentioned above, all assumptions used were the same as those used for this valuation. In particular, the discount rate used to value benefits assumed to be settled through a lump sum was not changed.

Deterioration of Asset Values

The purpose of this scenario is to illustrate the sensitivity of the Plan's valuation results to a deterioration of asset values. For this purpose, we assumed an immediate reduction in the market value of the Plan's non-fixed income assets, where non-fixed income investments include Real Estate and Global Equity, as shown in the investment policy summarized in Appendix B.

Using a methodology consistent with the one used to determine the going concern discount rate, we have determined that a decrease of 15% in the market value of non-fixed income assets would have a non-trivial probability (between 1 in 10 and 1 in 20) of occurring within the year following the valuation date. For purpose of this scenario, we have assumed that such a decrease would occur immediately on the valuation date and would have the following impact on the value of assets and valuation assumptions:

Market value of assets	The decrease in the market value of the non-fixed income portion of assets is assumed to have occurred immediately on the valuation date.
Going concern assumptions	This scenario is assumed to have no impact on the assumptions used for this valuation.

Longevity Risk

The purpose of this scenario is to illustrate the sensitivity of the Plan's valuation results to the potential that pension plan members will live longer than expected. For this purpose, we have determined that a plausible adverse scenario would be to assume that future mortality improvements[5] will be in line with the average improvements experienced by the Canadian population[6] over the most recent 15-year period available, with uniform improvement rates for all future years but varying by age[7] and gender.

[5] i.e. starting one year after the valuation in this context

[6] Based on Canadian population experience from the Hum Mortality Database from 2002 to 2016

[7] improvement rates below age 45 are set to those at age 45

Appendix H
Employer Certification

With respect to the Report on the Actuarial Valuation for Funding Purposes as at December 31, 2021 of the Plan, I hereby certify that, to the best of my knowledge and belief:

- The valuation reflects the terms of the Company's engagement with the actuary described in Section 2 of this report, particularly the decision to include a margin of 0.30% in the discount rate used to perform the going concern valuation and the Company's decisions in regards to determining the going concern and solvency funding requirements.
- A copy of the official plan documents and of all amendments made up to December 31, 2021 was provided to the actuary and is reflected appropriately in the summary of plan provisions contained herein.
- The asset information summarized in Appendix B is reflective of the Plan's assets.
- The membership data provided to the actuary included a complete and accurate description of every person who is entitled to benefits under the terms of the Plan for service up to December 31, 2021.
- All events subsequent to December 31, 2021 that may have an impact on the Plan have been communicated to the actuary.

August 8, 2022
Date

Brent Perdue
Signed

Brent Perdue, Sr Manager, Pension & Benefits
Name



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Mercer

Funding Valuation Results as at December 31, 2022

Retirement Plan for Employees of Canadian Utilities Limited and Participating Companies – Plan 1

09 June 2023

welcome to brighter

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1

Introduction

We have conducted an actuarial valuation of the Retirement Plan for Employees of Canadian Utilities Limited and Participating Companies – Plan 1 (the Plan) as of December 31, 2022. We are pleased to present the preliminary results of the valuation.

Mercer has prepared this report exclusively for CU to present preliminary results for the December 31, 2022 funding valuation for the Plan.

The valuation results herein are for discussion purposes. Should CU choose to file this valuation with the pension regulators, the required contributions would change as described. There is no requirement to file this valuation as of December 31, 2022.

2

Development of Funding Discount Rate and Margins

Proposed Basis

The discount rate is comprised of the following:

- Estimated returns for each major asset class consistent with market conditions on the valuation date and the target asset mix specified in the Plan's investment policy;
- Provision for investment and administrative expenses (currently 0.38%); and
- A margin for adverse deviations of 0.25%.

The defined benefit program is closed to new entrants and the Plan provides incentives for employees to remain employed until they attain eligibility for early retirement. Therefore, in time, solvency considerations including annuity purchase rates will become a more dominant feature of the Plan's funding requirements.

Development of Discount Rate

	12/31/2022 (Proposed)	12/31/2021 (Filed)	12/31/2020 (Filed)
Assumed investment return	5.00%	3.10%	3.10%
Margin for adverse deviations	(0.25%)	(0.30%)	(0.30%)
Net discount rate	**4.75%**	**2.80%**	**2.80%**

3

Going Concern Funding Valuation

Results (Millions)

	12/31/2022 Proposed Basis	12/31/2021 (Filed)	12/31/2020 (Filed)
Assets			
• Market value of assets	**$2,364.8**	**$2,992.9**	**$3,015.0**
Funding Target			
• Active members	$283.4	$469.9	$558.3
• Pensioners and survivors	$2,061.8	$2,486.6	$2,407.5
• Deferred pensioners and pending transfers	$12.4	$17.4	$16.1
	$2,357.6	**$2,973.9**	**$2,981.9**
Surplus (deficiency)	**$7.2**	**$19.0**	**$33.1**
Funded ratio	**100.3%**	**100.6%**	**101.1%**

Key Economic and Demographic Assumptions

	12/31/2022 Proposed Basis	12/31/2021 (Filed)	12/31/2020 (Filed)
Discount rate	4.75%	2.80%	2.80%
Indexing rate	3.0% on Jan 1, 2024, 2.2% on Jan 1, 2025, 1.85% thereafter	No change	1.85% per year
Salary scale	No change	No change	2.50% plus merit & promotion
Mortality	No change	No change. Confirmed by mortality experience study.	Canadian Pensioners Mortality (CPM) Private Sector Table with 95% adjustment and generational projection using Scale CPM-B

	12/31/2022 Proposed Basis	12/31/2021 (Filed)	12/31/2020 (Filed)
Retirement Rates	No change	No change	Retirement occurs when age and service sum to 90 years, but not after age 65 or before age 55

4

Reconciliation of Going Concern Position

(Millions)

	2022
Funding excess (shortfall) at Beginning of Period	**$19.0**
Interest on funding excess (shortfall)	0.5
Asset returns different than expected	(584.2)
Pensionable earnings less (greater) than assumed	1.8
Pension increases less (greater) than assumed	(30.0)
Termination experience	1.2
Retirement experience	2.2
Mortality experience	4.8
Impact of change to indexing rate	(38.2)
Impact of change in discount rate	629.7
All other sources combined	0.4
Funding excess (shortfall) at End of Period	**$7.2**

5

Defined Benefit Service Cost

(Millions)

	2023 Proposed Basis	2022 (Filed)	2021 (Filed)
Total current service cost	$4.0	$8.1	$11.3
Members' required contributions	($0.2)	($0.3)	($0.4)
Company current service cost	**$3.8**	**$7.8**	**$10.9**
Assumed members' pensionable earnings	$12.7	$18.3	$24.6
As a percentage of pay			
Members' required contributions	1.50%	1.51%	1.62%
Company current service cost	30.16%	42.51%	44.38%
Total	**31.66%**	**44.02%**	**46.00%**

6

Solvency Valuation – Alternative Settlement Method

An alternative settlement method for solvency funding purposes is permitted by Alberta Treasury Board and Finance's Update 13-01 Alternative Settlement Methods for Hypothetical Wind-Up and Solvency Valuations. By applying this method, future variable inflation protection is assumed to be replaced with a fixed percentage increase. For this purpose, we have assumed that annuities would be purchased with a fixed rate of increase of 1.88% per year.

Results (Millions)

	12/31/2022 Proposed Basis	12/31/2021 (Filed)	12/31/2020 (Filed)
Assets			
• Market value of assets	$2,364.8	$2,992.9	$3,015.0
• Termination expenses	($2.0)	($2.0)	($2.0)
	$2,362.8	**$2,990.9**	**$3,013.0**
Funding Target			
• Active members	$255.4	$396.8	$493.2
• Pensioners and survivors	$2,017.2	$2,438.4	$2,386.0
• Deferred pensioners	$12.3	$17.3	$16.8
	$2,284.9	**$2,852.5**	**$2,896.0**
Surplus (deficiency)	**$77.9**	**$138.4**	**$117.0**
Funded ratio	**103.4%**	**104.9%**	**104.0%**

Key Economic and Demographic Assumptions

	12/31/2022 Proposed Basis	12/31/2021 (Filed)	12/31/2020 (Filed)
Annuity purchase discount rate	4.91%	2.86%	2.56%
Annuity purchase COLA	1.88%	1.70%	1.48%
Annuity purchase discount rate net of COLA	2.97%	1.14%	1.06%
Commuted value discount rate net of COLA	2.32% for 10 years, 2.71% thereafter	0.81% for 10 years, 1.41% thereafter	0.47% for 10 years, 1.05% thereafter
Percentage of members electing commuted values	No change	No change	Actives under 55 – 70% Actives over 55 – 50% Inactives – 0%
Mortality	No change	No change	CPM 2014 Table with generational projection using scale CPM-B

Key factors that impacted the solvency position since the previous valuation as of December 31, 2021 were as follows:

- Asset returns less than expected (-17.1% net of expenses compared with average rate of 2.8% assumed in 2022).
- Impact of January 1, 2023 COLA of 3.0%.

Offset by:

- Changes in annuity purchase and commuted value discount rates (significant increase in annuity purchase rate net of COLA, as well as increase in commuted value rates net of COLA).

7

Hypothetical Wind-up Valuation – Annuity Purchase Cost

The hypothetical wind-up financial position in the absence of the alternative settlement method is as follows. For this purpose, we have assumed that annuities would be purchased with a fixed rate of increase of 3.0% per year, which is the maximum rate of increase under the Plan provisions.

Results (Millions)

	12/31/2022 Proposed Basis	12/31/2021 (Filed)	12/31/2020 (Filed)
Assets			
• Market value of assets	$2,364.8	$2,992.9	$3,015.0
• Termination expenses	($2.0)	($2.0)	($2.0)
	$2,362.8	**$2,990.9**	**$3,013.0**
Funding Target	**$2,564.5**	**$3,325.4**	**$3,471.7**
Surplus (deficiency)	**($201.7)**	**($334.5)**	**($458.7)**
Funded ratio	**92.1%**	**89.9%**	**86.8%**

8

Defined Benefit Contribution Requirements

(Millions)

	2023 Proposed	2022 (Filed)	2021 (Filed)
Minimum employer funding requirements			
• Company service cost	$3.8	$7.8	$10.9
• Going concern special payments (over 15 years)	$0.0	$0.0	$0.0
• Solvency special payments (over 5 years)	$0.0	$0.0	$0.0
Total	**$3.8**	**$7.8**	**$10.9**
Maximum funding requirements			
• Company service cost	$3.8	$7.8	$10.9
• Special payments	$0.0	$0.0	$0.0
Total	**$3.8**	**$7.8**	**$10.9**

9

COLA Disallowance for Utilities

As requested, we have estimated the impact of the disallowance of cost of living increases (COLA) in excess of 50% of CPI for the regulated utilities (ATCO Gas, ATCO Electric, ATCO Pipelines, ATCO Corporate, CU Inc., YECL, and Northland Utilities). This is as directed by the 2011 decision of the Alberta Utilities Commission ("AUC"). To determine the effect of this disallowance, a duplicate valuation is performed at December 31, 2022 using the proposed basis previously described in this report. This duplicate valuation considers the following:

- The market value of assets at December 31, 2022 is adjusted to exclude disallowed current service contributions remitted in 2012 as well as disallowed current service contributions and special payments remitted in 2013 to 2022, as required by the AUC's decision. We have also adjusted the asset value to exclude an estimated value of pension payments made as a result of COLA being granted at 100% of CPI rather than 50% of CPI.

- Liabilities and service costs are adjusted to allow future COLA based on 50% of CPI for the regulated utilities and ATCO Corporate, rather than 100% of CPI. An additional adjustment is made to exclude 50% of the actual COLA granted previously.

Estimated Impact on Funding Requirements (Millions)

These results are for illustration only, assuming that a new valuation is filed as at December 31, 2022.

	2023 Proposed Basis	Utilities Disallowance
Minimum employer funding		
• Company service cost	$3.8	$0.4
• Special payments	$0.0	$0.0
Total	**$3.8**	**$0.4**

The above utilities disallowance compares with $0.9 million calculated based on the December 31, 2021 valuation, and with $1.3 million calculated based on the December 31, 2020 valuation.

10

Important Notices

Mercer has prepared this report exclusively for CU to present preliminary results for the December 31, 2022 funding valuation. This report is intended to facilitate CU's decision making relating to the December 31, 2022 funding valuation. This report may not be used or relied upon by any other party or for any other purpose; Mercer is not responsible for the consequences of any such other use. Its content may not be modified, incorporated into or used in other material, sold or otherwise provided, in whole or in part, to any other person or entity, without Mercer's permission.

All parts of this report, including any documents incorporated by reference, are integral to understanding and explaining its contents; no part may be taken out of context, used or relied upon without reference to the report as a whole.

The results presented herein are preliminary and subject to change. This report is not a substitute for a formal valuation report.

Decisions about benefit changes, granting new benefits, investment policy, funding policy, benefit security and/or benefit-related issues should not be made solely on the basis of this preliminary valuation, but only after careful consideration of alternative economic, financial, demographic and societal factors, including financial scenarios that assume future sustained investment losses.

CU is responsible for selecting the plan's funding policy (including margins, if any, for adverse deviations in the going concern valuation), the actuarial and asset valuation methods in the going concern valuation, and other methodologies permitted by legislation for the solvency valuation.

The actuarial assumptions used in the going concern valuation reflect the actuary's best estimate, except for the margin for adverse deviations which has been selected by CU. CU is responsible for reviewing the going concern valuation assumptions referenced and advising Mercer as to any information it deems worthy of consideration in the determination of such assumptions.

To prepare the results in this report, actuarial assumptions are used to model certain scenarios from a range of possibilities for each valuation basis. The results based on those scenarios are included in this report. However, the future is uncertain and the plan's actual experience will differ from those assumptions; these differences may be significant or material. Different assumptions or scenarios within the range of possibilities may also be reasonable, and results based on those assumptions would be different. Furthermore, actuarial assumptions may be changed from one valuation to the next because of changes in regulatory and professional requirements, developments in case law, plan experience, changes in expectations about the future and other factors. The key assumptions used for the valuation are described in Sections 3 and 6 of this report.

Mercer has used and relied on the membership data as supplied by CU. If the data supplied are not sufficient and reliable for its intended purpose, the results of our calculation may differ significantly from the results that would be obtained with such data. Although Mercer has reviewed the suitability of the data for its intended use in accordance with accepted actuarial practice in Canada, Mercer has not verified or audited any of the data or information provided. Statistics on the membership data are provided in Appendix A.

Mercer has used and relied on the plan documents, including amendments, and interpretations of plan provisions, supplied by CU. If any plan provisions supplied are not accurate and complete, the results of any calculation may differ significantly from the results that would be obtained with accurate and complete information. Moreover, plan documents may be susceptible to different interpretations, each of which could be reasonable, and the results of estimates under each of the different interpretations could vary. There were no changes made to the plan provisions since the previous valuation that had a material impact on the liabilities of the plan.

We used financial data submitted by Northern Trust as of the valuation date without further audit. Customarily, this information would not be verified by a plan's actuary. We have reviewed the information for internal consistency and general reasonableness.

Funding calculations reflect our understanding of the requirements of Alberta legislation, the Income Tax Act and related regulations that are effective as of the valuation date. Mercer is not a law firm, and this analysis is not intended to be a legal opinion. CU should consider securing the advice of legal counsel with respect to any legal matters related to this document.

The plan administrator is solely responsible for selecting the plan's investment policies, asset allocations and individual investments.

Appendix A
Membership Data

	31/12/2022	31/12/2021	31/12/2020
Active Members Accruing DB Benefits			
Number	226	280	344
Total pensionable earnings for prior year	$27,634,371	$35,236,851	$43,021,123
Average pensionable earnings for prior year	$122,276	$125,846	$125,061
Average years of pensionable service	32.0	31.4	30.6
Average age	58.2	57.5	57.2
Active Members with DB Benefits, but Accruing MP Benefits			
Number	21	23	24
Total pensionable earnings for prior year	$3,361,297	$3,560,189	$3,631,384
Average pensionable earnings for prior year	$160,062	$154,791	$151,308
Average years of pensionable service	7.2	7.3	7.2
Average age	56.9	55.8	55.1
Deferred Pensioners			
Number	50	55	60
Total annual pension	$813,210	$904,231	$946,356
Average annual pension	$16,264	$16,441	$15,773
Average age	59.6	58.8	58.3
Pensioners and Survivors			
Number	2,749	2,761	2,747
Total annual lifetime pension	$134,602,689	$129,695,423	$123,349,289
Average annual lifetime pension	$48,964	$46,974	$44,903
Average age	72.7	72.3	72.0

Distribution of Active Members by Age and Pensionable Service:

	< 10	10-14	15-19	20-24	25-29	30-34	35-39	40+	Total
45-49					1				1
50-54				1	19	31	2		53
55-59			1		25	58	15	1	100
60-64	1				11	36	12	7	67
65-69					1	2	1	1	5
Total	**1**	**0**	**1**	**1**	**57**	**127**	**30**	**9**	**226**

Distribution of Inactive Members by Age:

Age	Deferred Pensioners	Pensioners and Survivors
< 45		1
45-49	1	
50-54	5	3
55-59	21	124
60-64	21	520
65-69	2	675
70-74		448
75-79		350
80-84		250
85-89		203
91-94		138
95+		37
Total	**50**	**2,749**

Appendix B

Plan Assets

(Millions)

	2022
January 1	**$2,992.9**
PLUS	
Members' contributions	$0.4
Company's contributions	$7.8
Investment income	$64.7
Net capital gains (losses)	($556.5)
LESS	
Pensions paid	$131.2
Lump-sum refunds	$2.9
Administration and investment expenses	$10.3
December 31	**$2,364.8**
Gross rate of return[1]	-16.8%
Rate of return net of expenses[1]	-17.1%

[1] Assuming mid-period cash flows.

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A business of Marsh McLennan

ATCO Electric Yukon (AEY)
2023-2024 General Rate Application (GRA)

Pension Balances and Deferral Balances

Line No.	Description	Cross Reference	2018	2019	2020	2021	2022	2023	2024
			Actual					Test Period	
1	Pension Costs								
2	Defined Benefit		240	240	273	249	201	39	39
3	Exclude COLA		(30)	(30)	(34)	(33)	(27)		-
4	Defined Benefit Pension	S.8.4, Line 20	210	210	239	216	174	39	39
7	Approved/Applied Defined Benefit Costs		505	505	505	505	505	39	39
8	Difference	L.4 - L.7	(295)	(295)	(266)	(289)	(331)	-	-
9	O&M portion of Difference	(L.8 x 65.0%)	(192)	(192)	(173)	(188)	(215)		
10	Impact of lower income tax deductions	(L.8 x 27.0%)	80	80	72	78	89		
11	Net of Income Tax	L.9 + L.10	(112)	(112)	(101)	(110)	(126)		
12	Total (refund to) / collection from customers	L.11 / (1 - 27.0%)	**(154)**	**(154)**	**(138)**	**(150)**	**(172)**	**-**	**-**
13	Pension Deferral write-off	S.8.4, Line 49	77	77	77	77	77	192	192
13	Cumulative Pension Deferral Balance[1]	S.8.8, Line 85	**(77)**	**(153)**	**(215)**	**(288)**	**(383)**	**(192)**	**-**

1. AEY updates the defined pension costs forecast in the test periods as the most recent 2023 actuarial valuation report becomes available during the information response period. A revised S8.8 showing the Cumulative Pension Deferral is attached on the AEY-UCG-050(b) Attachment 1. AEY has proposed transferring the deferral balance to deferred charges to be refunded to customers over the 2023-24 Test Period.

ATCO Electric YUKON

September 28, 2023 AEY-UCG-051

ATCO Electric Yukon (AEY)
2023-2024 General Rate Application (GRA)

Information Responses Round 1 to:
The Yukon Utilities Consumers' Group (UCG)
Received: September 6, 2023

AEY-UCG-051

Reference: July 7,2023 Application, page 8-6; Rate Base and Table 8.4

AEY states: These additions are primarily driven by a requirement to upgrade, enhance and replace components on the distribution and generation systems that have reached the end of their life cycle as well as meet system needs due to growth.

Request:

(a) Add a column in Table 8.4 showing rate base amounts for each of the years shown.

(b) Explain fully the need to more than double the capital expenditures from 2022 to each of the test years.

(c) Explain why AEY has not developed a more gradual approach to enhancing and replacing distribution and generation systems.

(d) Break down the Capital Additions chart 8.4 for AEY distribution and generation systems.

(e) Explain with examples why load growth will not result in a balance of costs versus new income produced.

Response:

(a) Please refer to the following table:

Table 1: Capital Additions & Rate Base
($000)

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Expenditures	14,784	10,476	9,491	13,529	13,001	15,147	18,914	31,234	25,073
Capital Additions	12,079	8,393	11,159	9,982	11,893	11,014	15,857	34,734	31,780
Net Rate Base[1]	**98,470**	**102,558**	**105,033**	**106,149**	**107,099**	**109,110**	**114,468**	**129,288**	**142,869**

(b-c) Please refer to responses AEY-YUB-042 and AEY-JM-027.

(d) Please refer to Table 2 below. The categories of GP&E & Software and CCS have been added to tie the total to Table 8.4 from the Application.

Table 2: Capital Additions
($000)

	2016	2017	2018	2019	2020	2021	2022	2023	2024
	Actuals							Test Period	
Distribution	5,471	5,667	7,693	8,676	7,349	5,094	11,940	20,494	14,400
Generation	5,277	1,847	3,079	400	3,642	5,591	3,020	3,993	15,043
GP&E & Software	1,332	880	387	907	902	329	897	2,157	1,837
CCS	-	-	-	-	-	-	-	8,090	500
Total	**12,079**	**8,393**	**11,159**	**9,982**	**11,893**	**11,014**	**15,857**	**34,734**	**31,780**

(e) While the rapidly expanding customer base does lead to increased revenues, it also increases the load strain on the current electrical infrastructure. This increase in load could lead to issues with reliability and potential increase in outage length as system restoration is more difficult due to cold load pickup. To ensure continued safe and reliable service, load capacity needs to increase. As such, the current infrastructure needs to be upgraded and the capital costs of these improvements are not completely offset by the increased customer base.

[1] Rate Base for the Test Period has been updated for Depreciation Parameters filed September 11, 2023.

ATCO Electric YUKON

September 28, 2023 AEY-UCG-052

ATCO Electric Yukon (AEY)
2023-2024 General Rate Application (GRA)

Information Responses Round 1 to:
The Yukon Utilities Consumers' Group (UCG)
Received: September 6, 2023

AEY-UCG-052

Reference: July 7,2023 Application, page 8-7; Contributions

Request:

(a) Explain how contribution in aid of construction is accounted for in the rate base.

(b) Explain why AEYs company investment policy has not been reviewed since 2010.

Response:

(a) When the assets are put into service and added to rate base, so is the corresponding contribution. This results in a net zero impact on the net rate base if the asset is fully contributed. The contribution added to the rate base is then depreciated in the same manner as the depreciation of the corresponding assets. Please refer to Schedule 1.1, line 12, for how this is recorded in the Application.

(b) The investment policy is reviewed when AEY's Terms and Conditions of Service (T&Cs) are reviewed and updated. As outlined in the Application,[1] because the T&Cs are also those of Yukon Energy Corporation (YEC), AEY reached out to YEC on this matter. Both parties consider that, given the number of changes and proposals included in AEY's GRA (and YEC's anticipated upcoming GRA), as well as simultaneous staffing resources required to properly review and address any required changes to T&Cs, undertaking such a review is not feasible at this time. Notwithstanding the above, both parties also agree that there are multiple sections in the T&Cs that require review (for example: maximum investment levels). As

[1] 2023-2024 AEY GRA Application, Cover Letter, PDF pp. 2-3.

such, both parties proposed to address any required changes and/or updates to the T&Cs sometime in mid to late 2024, as a standalone limited scope filing, rather than including any changes as part of a GRA.

ATCO Electric YUKON

September 28, 2023 AEY-UCG-053

ATCO Electric Yukon (AEY)
2023-2024 General Rate Application (GRA)

Information Responses Round 1 to:
The Yukon Utilities Consumers' Group (UCG)
Received: September 6, 2023

AEY-UCG-053

Reference: July 7, 2023 Application, page 8-5; Deferred Charges and Credits

Request:

(a) Explain how deferred charges and credits are accounted for in rate base.

(b) Give forecast costs for this GRA. Is the Rate Case Reserve adequate to cover these costs?

(c) Does AEY foresee the need to continue with a Rate Case Reserve. Why or why not?

(d) Explain why AEY over collected in 2014 and 2015 in the benefit pension account.

(e) Where is Schedule 8.8?

Response:

(a) Deferred charges and credits are balances held for deferral accounts and reserve accounts that are due to or from customers. These amounts are settled through either the rate adjustment rider throughout the Test Period or through a separate rider and the mid-year balance of amounts held are included in rate base. Net balances due to customers reduce the capital funding requirements and net balances due from customers are funded at the approved debt to equity ratio.

(b) Forecast costs for rate case expense are $608,000. The previous balance of the rate case reserve has been returned to customers through the 2022 Rate Relief. The expected cost of this Proceeding is forecast to be recovered over the Test

Period. Consistent with historical precedent,[1] any differentials between the estimate and forecast costs will be accounted for in the reserve account for true up in a future application.

(c) AEY requires the Rate Case Reserve account. This is the mechanism to record and settle costs approved by the Board related to the participation in regulatory proceedings for all parties, including the Board, interveners and applicants.

(d) The Pension Deferral Account was approved due to uncertainty surrounding the forecast and potentially material impact of the costs associated with AEY's Defined Benefit Plan. For the years 2014 and 2015, the forecast costs included in revenue requirement were higher than the actual costs incurred, and the differential was returned to customers through the 2016-2017 GRA.

(e) Schedule 8.8 was included in the Excel workbook as part of AEY's Application filed on July 7, 2023, and is also included in the Excel workbook with the updated schedules filed on September 11, 2023, with AEY's Depreciation Study. A copy of Schedule 8.8 has also been re-attached in AEY-UCG-053(e) Attachment 1.

[1] Board Order 2017-01.

ATCO Electric Yukon (AEY)
2023 - 2024 General Rate Application (GRA)

Continuity Schedule of Deferred Charges & Credits
($000)

Line No.	Description	Cross Ref.	Actuals 2016	2017	2018	2019	2020	2021	2022	Test Period 2023	2024	Approved 2016	2017
1	**Total Deferred Charges & Credits Summary**												
2													
3	**Write-off Summary**												
4	Rate Case Costs	L. 22	(313)	(313)	(313)	(313)	(313)	(313)	(178)	(156)	(203)	(313)	(313)
5	Watson Lake LNG Study Costs	L. 32	(99)	(99)	(99)	(99)	(99)	(99)	(99)	74	124	(99)	(99)
6	Demand Side Management		-	-	-	-	-	-	-	-	-		
7	Pension Deferral Account	L. 49	77	77	77	77	77	77	77	223	223	77	77
8	ERA/IPP Legal Costs		-	-	-	-	-	-	-	94	94	-	-
9	**Total Write-off**		(334)	(334)	(335)	(335)	(335)	(334)	(200)	234	143	(334)	(335)
10													
11	**Deferred Credits Mid-Year Balance Summary**												
12	Rate Case Reserve	L. 26	1	(45)	(210)	(522)	(835)	(1,147)	(1,393)	(793)	(52)	176	156
13	Watson Lake LNG Study Costs	L. 35	263	345	246	148	49	(50)	(149)	(161)	(62)	263	345
14	Demand Side Management Program Costs	L. 44	199	-	-	-	-	-	-	-	-	199	-
15	Pension Deferral Account	L. 52	(39)	(39)	(35)	(112)	(188)	(244)	(308)	(287)	(111)	(39)	(39)
16	ERA/IPP Legal Costs		-	-	-	-	73	178	198	141	47		
17	**Total Deferred Credits Mid-Year Balance**		424	261	1	(487)	(901)	(1,263)	(1,651)	(1,100)	(225)	600	463
18													
19	Rate Case Costs												
20	Balance at Beginning of Year		39	(37)	(54)	(366)	(679)	(991)	(1,304)	(1,481)	(104)	39	313
21	Add: Rate Case Costs		236	296	-	-	-	-	-	301	307	586	-
22	Less: Rate Case (Write-off) Credit		(313)	(313)	(313)	(313)	(313)	(313)	(313)	(156)	(203)	(313)	(313)
23	Less: Adjustment for YUB 2022-13		-	-	-	-	-	-	135	1,232	-	-	-
24	Balance at End of Year		(37)	(54)	(366)	(679)	(991)	(1,304)	(1,481)	(104)	-	313	-
25													
26	Mid-Year Balance	(L.20+L.24)/2	1	(45)	(210)	(522)	(835)	(1,147)	(1,393)	(793)	(52)	176	156
27													
28	Watson Lake LNG Study Costs												
29	Balance at Beginning of Year		131	394	296	197	98	(1)	(99)	(198)	(124)	131	394
30	Add: Costs/AFUDC		-	-	-	-	-	-	-	-	-	-	-
31	Add: Transfers from Plant Additions		362	-	-	-	-	-	-	-	-	362	-
32	Less: Write-off		(99)	(99)	(99)	(99)	(99)	(99)	(99)	74	124	(99)	(99)
33	Balance at End of Year		394	296	197	98	(1)	(99)	(198)	(124)	-	394	296
34													
35	Mid-Year Balance	(L.29+L.33)/2	263	345	246	148	49	(50)	(149)	(161)	(62)	263	345
36													
37	Demand Side Management Program Costs												
38	Balance at Beginning of Year		398	-	-	-	-	-	-	-	-	398	-
39	Add: Costs		136	-	-	-	-	-	-		-	136	-
40	Less: Transfer to Rate Base		(534)	-	-	-	-	-	-	-	-	(534)	
41	Less: Write Off									-	-	-	-
42	Balance at End of Year		-	-	-	-	-	-	-	-	-	-	-
43													
44	Mid-Year Balance	(L.38+L.42)/2	199	-	-	-	-	-	-	-	-	199	-
45													
46	Pension Deferral												
47	Balance at Beginning of Year		-	(77)	-	(71)	(154)	(223)	(265)	(351)	(223)	-	(77)
48	Add: Costs		(154)	-	(148)	(160)	(146)	(119)	(163)	(94)	-	(154)	-
49	Less: Write-off		77	77	77	77	77	77	77	223	223	77	77
50	Balance at End of Year		(77)	-	(71)	(154)	(223)	(265)	(351)	(223)	-	(77)	-
51													
52	Mid-Year Balance	(L.47+L.50)/2	(39)	(39)	(35)	(112)	(188)	(244)	(308)	(287)	(111)	(39)	(39)
53													
54	EPA/IPP Legal Costs												
55	Balance at Beginning of Year		-	-	-	-	-	146	209	187	94		
56	Add: Costs		-	-	-	-	146	63	(22)	-	-		
57	Less: Write-off		-	-	-	-	-	-	-	(94)	(94)		
58	Balance at End of Year						146	209	187	94	-		
59													
60	Mid-Year Balance	(L.55+L.58)/2	-	-	-	-	73	178	198	141	47	-	-

ATCO Electric YUKON

September 28, 2023 AEY-UCG-054

ATCO Electric Yukon (AEY)
2023-2024 General Rate Application (GRA)

Information Responses Round 1 to:
The Yukon Utilities Consumers' Group (UCG)
Received: September 6, 2023

AEY-UCG-054

Reference: July 7,2023 Application, page 8-8 and 8-9; Working Capital

Request:

(a) Explain how working capital impacts rate base and revenue requirement for each of the test years.

(b) Explain the concepts of Common Equity (retained earnings component) and Common Equity (dividend component).

(c) Provide and explain the components of dividend common equity for AEY. How have these have been instructed by earlier Board decisions?

(d) Break down the working capital costs of test years from table 8.7 for each component listed on page 8-8.

Response:

(a) Working capital is the average short term capital requirements to fund AEY's short term assets (Accounts Receivable and Inventories) net of short term liabilities (Accounts Payable). Typically, the payment of expenses occurs in advance of the receipt of revenues and this balance is a component of the company's total rate base and is included in AEY's cost of capital.

(b) The retained earnings component of Common Equity is the undistributed utility earnings (or deficit) accumulated from operations. Retained earnings increases when there are positive utility earnings and decreases when dividend is declared or there are negative earnings. The dividend component of Common Equity is the return distributed to shareholders.

(c) AEY's last approved common equity ratio is 40 percent in the 2016-2017 GRA. AEY's dividend distribution has followed and maintained the Board-approved 40 percent structure in common equity.

(d) The working capital breakdown was included in the Excel workbook as part of AEY's Application filed on July 7, 2023, and is also included in the Excel workbook with the updated schedules filed on September 11, 2023, with AEY's Depreciation Study. A copy of Schedule 8.10 has also been reattached in AEY-UCG-054(d) Attachment 1.

ATCO Electric Yukon (AEY)
2023 - 2024 General Rate Application (GRA)

Computation of Allowance for Working Capital
($000)

Line No.	Description	Cross Ref.	Actuals							Test Period		Approved	
			2016	2017	2018	2019	2020	2021	2022	2023	2024	2016	2017
1	Operations and Maintenance	S.1.1 L.9	11,141	11,884	11,114	11,104	11,966	13,814	14,794	14,609	14,863	11,630	11,754
2	Purchase Power		25,135	27,524	27,674	27,419	28,825	29,432	29,498	29,778	30,961	25,229	26,404
3	Diesel Fuel	S.1.1 L.8	5,363	5,571	5,403	5,432	5,709	5,353	5,766	9,181	9,023	5,257	5,334
4	Property Taxes	S.1.1 L.10	253	253	264	277	277	267	275	285	292	262	267
5	Net O&M		41,892	45,232	44,455	44,231	46,776	48,866	50,334	53,853	55,139	42,377	43,759
6	O&M Lag Days		4	4	4	4	4	4	4	4	4	4	4
7	Operating Expenses Working Capital		477	515	506	504	533	557	573	614	628	483	499
8													
9	Tax Installments		0	0	0	0	(257)	(1,877)	(764)	(218)	(1,134)	0	0
10	Income Tax Installment Lag Days		22	22	22	22	22	22	22	22	22	22	22
11	Tax Installments Working Capital		0	0	0	0	(15)	(113)	(46)	(13)	(68)	0	0
12													
13	Income Taxes Receivable (Payable)		0	0	0	(268)	(776)	65	722	2,045	0	0	0
14	Tax Receivable Lag Days		204	204	204	204	204	204	204	204	204	204	204
15	Taxes Payable Working Capital		0	0	0	(150)	(434)	36	404	1,143	0	0	0
16													
17	Inventory (Three-Year Average)		2,175	2,215	2,386	2,458	2,565	2,584	3,102	2,750	2,812	2,123	2,123
18													
19	GST Impact on Working Capital	S.8.11 L.36	151	130	124	130	159	170	182	147	183	134	129
20													
21	Return - Long Term Debt		3,182	3,191	3,200	3,132	3,002	2,999	3,136	3,455	3,693	3,235	3,319
22	Combined Long Term Debt Lag Days		(52)	(52)	(52)	(52)	(52)	(52)	(52)	(52)	(52)	(52)	(52)
23	Long Term Debt Working Capital		(453)	(455)	(456)	(446)	(428)	(427)	(447)	(492)	(526)	(461)	(473)
24													
25	Return - 50% of Common Equity		2,049	2,609	2,645	2,757	2,791	2,615	2,652	2,423	2,704	1,776	1,886
26	Dividend Lag Days		(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)	(4)
27	Common Equity (Dividend) Working Capital		(22)	(29)	(29)	(30)	(31)	(29)	(29)	(27)	(30)	(19)	(21)
28													
29	Return - 50% of Common Equity		2,049	2,609	2,645	2,757	2,791	2,615	2,652	2,423	2,704	1,776	1,886
30	Depreciation Lag Days		42	42	42	42	42	42	42	42	42	42	42
31	Common Equity (Retained Earnings) Working Capital		236	300	304	317	321	301	305	279	311	204	217
32													
33	Net Depreciation		4,336	4,590	4,755	4,747	4,953	5,073	5,310	7,231	8,691	4,342	4,661
34	Depreciation Lag Days		42	42	42	42	42	42	42	42	42	42	42
35	Depreciation Working Capital		499	528	547	546	570	584	611	832	1,000	500	536
36													
37	Working Capital		3,062	3,206	3,383	3,330	3,240	3,662	4,655	5,235	4,315	2,964	3,010

ATCO Electric YUKON

September 28, 2023 AEY-UCG-055(1)

ATCO Electric Yukon (AEY)
2023-2024 General Rate Application (GRA)

Information Responses Round 1 to:
The Yukon Utilities Consumers' Group (UCG)
Received: September 6, 2023

AEY-UCG-055(1)

Reference: July 7,2023 Application, page 8-8 #35; Working Capital

AEY states: "*To determine the working capital for the test periods, AEY completed a review of the components of each of the items in necessary working capital to ensure that the nature of the revenue/expenses included in each category had not changed materially since the previous lead/lag study. Based on this review, AEY has not identified any material updates required to the lead/lag days as previously determined and approved in Board Order 2017-01.*

Request:

(a) Provide all details of the lead lag analysis conducted by AEY for this application as well as the referenced previous lead lag study.

Response:

(a) Please refer to AEY-UCG-055(1) Attachment 1 for the lead-lag study conducted for AEY's 2016-2017 GRA, approved in Board Order 2017-01. Regarding AEY's 2023-2024 GRA, AEY determined that there were no material changes in the types of revenues and expenses or in payment terms. As a result, AEY did not conduct a full lead-lag study for the purpose of this Application, as it was determined to be unnecessary.

ATCO Electric Yukon (AEY)
2023 - 2024 General Rate Application (GRA)

Lead/Lag Study

Line No.		Days
1	Average lag in revenue collection:	41.87
2	Less: average lag in payment of operating expense:	37.71
3	Net O&M lag days	4.16
4		

Lead/Lag on Revenues

Line No.	Revenue Type	2015 Revenue ($000)	Lag Days	Weighted Revenue ($000)
5				
6				
7				
8				
9	Residential	22,404	42.83	959,669
10	Commercial	27,121	41.12	1,115,229
11	Street & Sentinel Lighting	1,242	40.84	50,724
12	Secondary	890	41.89	37,284
13	Revenues included in Lead/Lag Study	51,657	41.87	2,162,906
14				
15				

Lead/Lag on Operating Expenses

Line No.		2015 Operating Expenses ($000)	(Lead)/Lag Days	Weighted Revenue ($000)
16				
17				
18				
19				
20	Salary and wages	5,710	31.60	180,409
21				
22	Fuel	6,621	47.94	317,427
23				
24	Purchased Power	30,373	37.68	1,144,397
25				
26	Property taxes	256	2.90	743
27				
28	Other Operating Expenses			
29	Insurance	90	(135.90)	(12,231)
30	Intercompany	961	31.86	30,618
31	IT Services	481	41.40	19,913
32	Employee travel and expenses	206	36.77	7,574
33	Other	4,168	36.93	153,918
34		5,906	33.83	199,793
35				
36	Operating Expenses included in the Lead Lag Study	48,866	37.71	1,842,769

ATCO Electric YUKON

September 28, 2023 AEY-UCG-055(2)

ATCO Electric Yukon (AEY)
2023-2024 General Rate Application (GRA)

Information Responses Round 1 to:
The Yukon Utilities Consumers' Group (UCG)
Received: September 6, 2023

AEY-UCG-055(2)

Reference: July 7,2023 Application; Working Capital

Request:

(a) Has there been deferred costs incurred with any studies? Give details.

(b) Please explain why there are no DSM-related costs forecast for 2023 and 2024.

(c) Is AEY still practicing DSM? Explain.

Response:

(a) There have not been any deferred costs incurred with respect to studies in this Application.

(b-c) Please refer to the response to AEY-JM-020(a) and AEY-JM-020(b).

ATCO Electric YUKON

September 28, 2023 AEY-UCG-056

ATCO Electric Yukon (AEY)
2023-2024 General Rate Application (GRA)

Information Responses Round 1 to:
The Yukon Utilities Consumers' Group (UCG)
Received: September 6, 2023

AEY-UCG-056

Reference: July 7,2023 Application, section 8 Attachment 8.1

AEY has submitted an assessment by Concentric Energy Advisors of the business and financial risk of AEY to FortisBC Energy as well as other regulated electricity and gas distribution utilities in Canada and the business and financial risk of AEY compared to AEY's risk profile at the time of its 2008 GRA filing.

Request:

(a) Provide details and documentation related to the RFP process followed by AEY before hiring Concentric to undertake the business and financial risk study.

(b) Confirm that in its Board Order 2014-06 (dated April 23, 2014), the YUB determined that AEY did not qualify for a risk premium over the BCUC benchmark utility. Please explain where this is discussed in the Concentric report.

(c) Explain how each of the utilities mentioned on page 3 of the report are regulated (i.e., cost of service, performance based, etc.)

(d) Explain why AEY claim they are at risk when they have exceeded the prescribed rate of return sanctioned by the YUB since the last GRA.

Response:

(a) Pursuant to YUB Rule 14(4)(a), AEY declines to provide the requested information on the basis that it is not relevant to this Proceeding. AEY will only seek recovery of costs in accordance with the scale of costs as prescribed by the Board.

(b) Confirmed, with regard to Board Order 2014-06; please refer to page 2 of Concentric's report. Also as discussed on that page, in the more recent Board

Order 2017-01, the YUB found that AEY had provided sufficient evidence to support a risk premium of 25 basis points over the BCUC benchmark.

(c) Concentric has added a column to Figure 1 of its report which provides the requested information. The information for FortisBC Energy and FortisBC Electric has also been updated to reflect the BCUC's recent decision in the GCOC (Stage 1) Proceeding.

Comparators Type of Regulation

	Awarded ROE	Equity Ratio	Business Risk Compared to AEY	Type of Regulation
ATCO Electric Yukon (current)	9.00%	40.0%	N/A	COS
Canadian Electric & Gas Utilities				
FortisBC Energy	9.65%	45.0%	Lower	PBR
FortisBC Electric	9.65%	41.0%	Lower	PBR
Ontario Electric Distributors	9.36%	40.0%	Lower	PBR
Newfoundland Power	8.50%	45.0%	Lower	COS
Maritime Electric Company Ltd	9.35%	40.0%	Similar	COS
ATCO Electric Distribution[1]	8.50%	37.0%	Lower	PBR
Pacific Northern Gas-West	9.50%	46.5%	Higher	COS
2022-2023 U.S. Electric Utilities				
Electric T&D Utilities	9.56%	51.6%	Lower	Various

(d) The cost of capital is a forward-looking concept, and the evaluation of business risk is generally a qualitative analysis. The fact that a company has generally been able to earn its authorized ROE in the past does not necessarily indicate whether it will be able to do so in the future, as operating conditions and risks change over time. Further, a utility that earns its authorized ROE does not necessarily have low business risk. The authorized ROE provides a utility the opportunity to earn that return, not a guarantee that it will do so. Concentric has provided evidence that

[1] Alberta 2023 Generic Cost of Capital Decision is expected October 2023.

AEY's very small size magnifies other business risks for the Company and that investors require a higher return to compensate for the risks associated with that small size.

ATCO Electric YUKON

September 28, 2023 AEY-UCG-057

ATCO Electric Yukon (AEY)
2023-2024 General Rate Application (GRA)

Information Responses Round 1 to:
The Yukon Utilities Consumers' Group (UCG)
Received: September 6, 2023

AEY-UCG-057

Reference: July 7,2023 Application, page 9-1; Capital Additions

AEY states; *"AEY is seeking Board approval of the 2016-2022 actuals on a final basis and approval of its forecasts for 2023 and 2024."*

Request:

(a) Explain how AEY has already claimed these capital expenditures and additions for the non-test years since last GRA and now ask for approval? Is this not retroactive rate making?

Response:

(a) To clarify, AEY has not claimed these capital expenditures and additions for non-Test Years. Since there has not been an application, since the 2016-2017 AEY GRA, AEY has included actuals from 2016 to 2022 in the AEY 2023-2024 GRA for Board approval. As stated in AEY-UCG-065(b), consistent with generally accepted utility practices, AEY has included all utility capital that is in service within its opening rate base, net of accumulated depreciation expenses. AEY has continued to operate and manage its capital program within the funding included in rates approved in the 2016-2017 GRA and has reported the annual changes to rate base through the Annual Filings, which are filed with the Board each year. AEY notes that the net cost of capital has been included in the 2023-2024 Revenue Requirement, on a prospective basis, and AEY is not seeking retroactive recovery of returns or depreciation expenses incurred for the period since its last GRA. Opening rate base continues to be within scope for the Board's review and approval as part of this Application.

ATCO Electric YUKON

September 28, 2023 AEY-UCG-058

ATCO Electric Yukon (AEY)
2023-2024 General Rate Application (GRA)

Information Responses Round 1 to:
The Yukon Utilities Consumers' Group (UCG)
Received: September 6, 2023

AEY-UCG-058

Reference: July 7,2023 Application, page 9-1; Capital Additions

AEY in #3 and 4 rationalizes the need for extreme capital expenditures and additions are caused by growth in the Yukon because of rapidly increasing population.

Request:

(a) Provide documented evidence of this population growth.

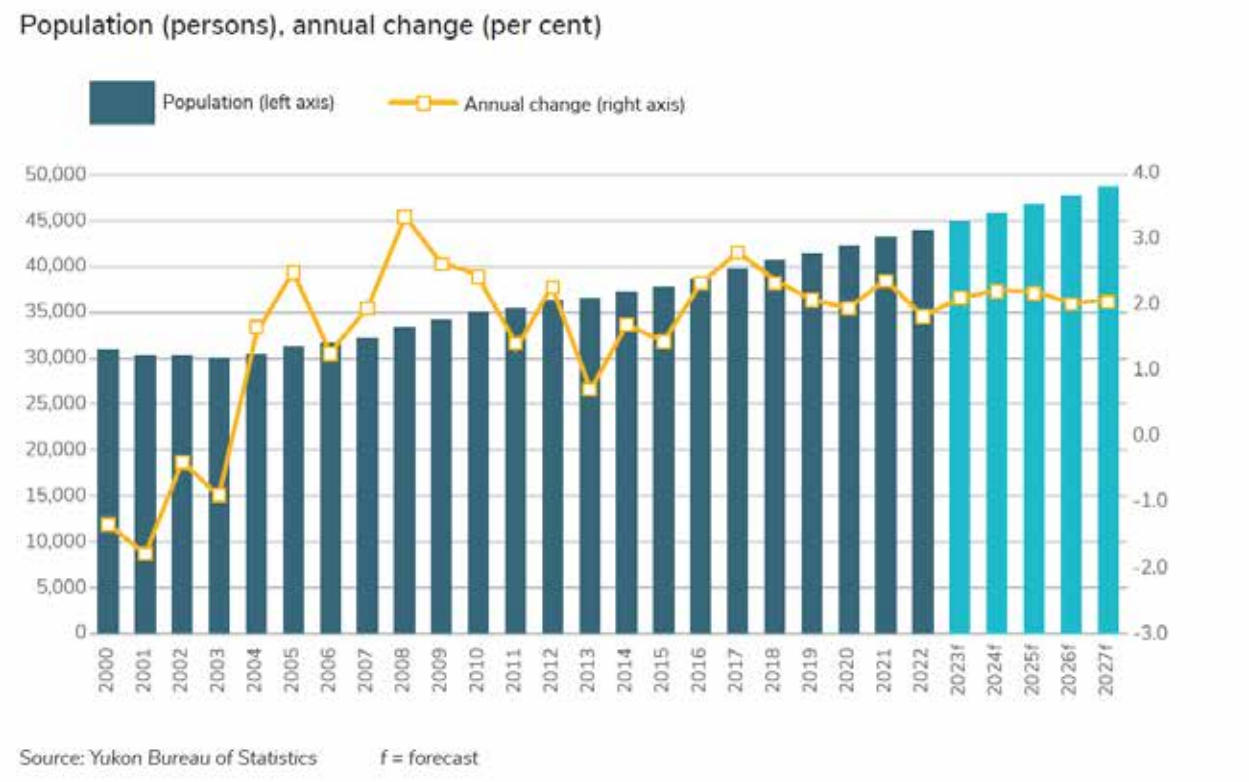
(b) Explain if this population growth has not been relevant for each of the non-test years from 2018 to 2022. Explain why AEY has not progressively rectified the need to upgrade during this time frame.

Response:

(a) The chart below, obtained from the 2023-2024 Fiscal and Economic Outlook,[1] shows the increase in population from 2000 until 2027 (forecast) compared with the annual change. According to the report, the Yukon's population has grown just over 44 percent over the past 20-years. This growth was second only to Alberta (45.2 percent) among all provinces and territories and was well ahead of the national average growth of 24 percent. The population is projected to continue to increase by an average of 2.1 percent per year and by 2027, the Yukon's population is expected to be near 49,000.

[1] https://yukon.ca/en/2023-24-fiscal-and-economic-outlook, PDF p. 17.

Chart 1: Yukon Population Growth



(b) Population growth is a relevant consideration for all years as AEY has a mandate to provide safe and reliable service and has undertaken capital projects to ensure this is met. The growth in population has also led to increased work in New Extensions as can be seen in Schedule 9.1, Line17, which has costs for all years in 2018 – 2022 greater than the 2016-2017 Test Period. With the recent rapid growing population, there is additional load causing strain on the distribution network. This additional load on the current infrastructure has increased the risk to the network's reliability, and capital distribution improvements are required to address system concerns in a planned manner. AEY's capital plans focus on system performance, reliability, and safety. Assets that are shown to have vulnerability are prioritized to be replaced or rebuilt. AEY completes proactive planning for system improvement and does not proceed with the work until required by system conditions. Furthermore, there are factors that are outside of

AEY's control that can impact projects, such as weather, supply chain and global events. These factors can lead to either the advancement or delay of capital projects, causing the actual capital expenditures to fluctuate from year to year. For example, the restrictions imposed under the pandemic greatly impacted capital projects, as many could not proceed in 2020 and 2021, which resulted in a large uptick in capital additions in 2022.[2]

[2] 2023-2024 AEY GRA, Section 9.1, PDF p. 173.

ATCO Electric YUKON

September 28, 2023 AEY-UCG-059

ATCO Electric Yukon (AEY)
2023-2024 General Rate Application (GRA)

Information Responses Round 1 to:
The Yukon Utilities Consumers' Group (UCG)
Received: September 6, 2023

AEY-UCG-059

Reference: July 7,2023 Application, pages 9-1 and 9-2; Capital Additions

AEY states: "*To support the capital spend, AEY provided Business Cases related to capital expenditures as follows: Business Cases are provided for 2016-2017 where variances from actual to approved were both greater than 100 percent and greater than $100,000; Business Cases are provided for capital expenditures for 2018-2022 that exceeded $100,000; Business Cases are provided for significant upcoming projects where certain un-capitalized costs are forecast in the Test Period but capitalized expenditures are forecast subsequent to the Test Period*."

Board Order 2014-06, Reasons for Decision, page 64

"However, YECL needs to provide information in relation to project cost overruns in its application. ***Therefore, the Board directs YECL in future applications to explain more fully the reasons for project overruns.*** *For clarity, for project costs overruns that are (collectively) 100 percent over and $100,000 greater than the original estimate, YECL is to provide business case type descriptions in the Application, to alert interveners and the Board to the cost overruns, thereby allowing for a more efficient process to examine the cost overruns. Furthermore, YECL, in their explanations, are to explain why the expenditure was not foreseen and the actions it takes to ensure that such overruns will not occur in future. Moreover, for projects similar in nature to the Oracle HRxcellence HR management project with expenditures greater than $100,000, which may arise between GRAs, YECL in future applications is directed to furnish business cases for such projects and the reasons why YECL deemed it necessary and reasonable to proceed with the project."*

Board Order 2009-2, page 37

> *"The Board directs YECL in future to provide business cases for all major capital expenditures at the time YECL files its rate applications to give the Board and Intervenors better opportunity to examine the business cases and time to allow for written information requests.* ***Further, the Board directs that YECL provide an annual update on its capital plans and expenditures. The Board further directs YECL in future rate applications to provide an itemized list of miscellaneous capital expenditures.****"*

Request:

(a) Has AEY given reasons for all cost overruns? Explain using various Business Cases.

(b) Provide business case type information in relation to projects forecast to be added to rate base in 2023 and 2024 where actual total project costs are forecast to be $100,000 greater than originally estimated.

(c) Has AEY provided the Board with an annual update on its capital plans and expenditure? Explain with references.

(d) Explain why AEY considers "major capital projects" to only be those projects costing $500,000 or greater. Page 9-8, #21

(e) Has the Board ever given a defined threshold to what it considers AEY Capital Expenditures and Additions spending should follow? Explain giving references.

(f) Does AEY believe that a utility with a $100 million rate base (such as AEY) should have the same expenditures threshold to define a major project as a utility with a $226 million rate base (such as YEC)? Explain

Response:

(a) Please refer to Business Cases #01, 02, and 03 for the projects in 2016-2017 that have cost overruns that are greater than $100,000 and 100 percent of the approved costs.

(b) AEY has complied with Board Order 2009-02 for Business Cases in the Test Period. AEY was directed in Board Order 2009-02 direction #19 to provide Business Cases for major capital projects in the next GRA. AEY did so using

$500,000 as the threshold for major capital projects. In Board Order 2014-06 Section 14.1, the Board stated that this direction #19 has been complied with.

(c) Yes, AEY includes the current year additions in the Property, Plant and Equipment section of the Annual Filing and the following year's capital forecast is provided in paragraph 6 of the Statutory Declaration included in the annual filing.

(d) Please refer to the response to part (b) above.

(e) Please refer to the response to part (b) above.

(f) AEY considers the $500,000 threshold for major capital projects established in Board Order 2009-02 to remain appropriate.

ATCO Electric YUKON

September 28, 2023 AEY-UCG-060

ATCO Electric Yukon (AEY)
2023-2024 General Rate Application (GRA)

Information Responses Round 1 to:
The Yukon Utilities Consumers' Group (UCG)
Received: September 6, 2023

AEY-UCG-060

Reference: July 7,2023 Application, pages 9-1 to 9-7; Capital Additions

Request:

(a) Provide an itemized list of miscellaneous capital expenditures greater than $100,000 for Generation Improvements Table 9-2, Distribution Improvements Table 9-4, New Extensions Table 9-3, Street and Sentinel Lights Table 9-5 , Meters Table 9-6, and General Property&Equipment Table 9-7as per Board Order Board Order 2009-8, page 37

> *"Further, in future GRA applications, the Board directs YEC to include business cases for major capital items, including electronic models. Business cases will include:*
>
> - *descriptions of the project*
> - *economic analysis including preliminary engineering estimates*
> - *discussion of alternatives and how the chosen option was determined*
> - *discussion of the risks of proceeding with the chosen alternative*
> - *discussion of risks of not proceeding with the chosen alternative; and*
> - *discussion of assumptions included in the business case including escalation*
> - *factors, loading, financial measures, term of project and associated ancillary costs."*

(b) For any of the itemized list above show which projects have a business case presented and which not.

(c) For any of the itemized list not demonstrating a business plan, then we now request this information.

(d) Provide a detailed description and detailed breakdown of the total costs incurred in all the generation plant projects where actual expenditures are over $100,000, when these costs were incurred and when these projects are proposed to be added to rate base. Provide supporting analysis in Excel spreadsheet.

(e) What were the average annual capital expenditures on generation plant projects for the period 2017 -2022?

(f) Provide a detailed description and detailed breakdown of the total costs incurred in all new extension projects where actual expenditures are over $100,000, when these costs incurred and when these projects are proposed to be added to the rate base. Please provide the supporting analyses in an Excel spreadsheet.

(g) What were the average annual capital expenditures on new extensions projects for the period 2017-2022?

(h) Provide a detailed description and detailed breakdown of the total costs incurred in all the distribution improvements projects where actual expenditures are over $100,000, when these costs were incurred and when these projects are proposed to be added to rate base. Please provide the supporting analyses in an Excel spreadsheet.

(i) What were the average annual capital expenditures on distribution improvements projects for the period 2017-2022?

(j) provide a detailed description and detailed breakdown of the total costs incurred in all street and sentinel lights projects where actual expenditures are over $100,000, when these costs were incurred and when these projects are proposed to be added to the rate base. Please provide the supporting analyses in an Excel spreadsheet.

(k) What were the average annual capital expenditures on new street and sentinel lights projects for the period 2017-2022?

(l) provide a detailed description and detailed breakdown of the total costs incurred in all the meter's projects where actual expenditures are over $100,000, when these costs were incurred and when these projects are proposed to be added to the rate base. Please provide the supporting analyses in an Excel spreadsheet.

(m) What were the average annual capital expenditures meters projects for the period 2017-2022?

(n) Provide a detailed description and detailed breakdown of the total costs incurred in all the generation plant and equipment projects where actual expenditures are over $100,000, when these costs were incurred and when these projects are proposed to be added to rate base. Please provide the supporting analyses in an Excel spreadsheet.

(o) What were the average annual capital expenditures on generation plant and equipment projects for the period 2017-2022?

Response:

(a) All capital expenditures summarized in Tables 9-2 through 9-7 of the Application can be found in the 2023-2024 AEY GRA Regulatory Schedules, Schedule 9.2. For example, on Table 9-2, the total generation matches the total on Schedule 9.2, line 131, with all the projects that make up that total listed from lines 2 through 129.

(b) Please refer to AEY-YUB-046(a) Attachment 1 for an itemized list showing which projects have a Business Case and which do not.

(c) As outlined in the Application,[1] AEY has provided Business Cases related to capital expenditures as follows:

a. Business Cases are provided for 2016-2017 where variances from actual to approved were both greater than 100 percent and greater than $100,000;[2]

b. Business Cases are provided for capital expenditures in 2018-2022 that exceeded $100,000;[3]

c. Business Cases are provided for projects planned to be undertaken in 2023-2024 where capital expenditures are forecast to be $500,000 or greater;[4] and

1 2023-2024 AEY GRA, Section 9.1, Para. 5, PDF p. 174.
2 Board Order 2014-06.
3 Board Order 2014-06.
4 Board Order 2009-02.

d. Business Cases are provided for significant upcoming projects where certain un-capitalized costs are forecast in the Test Period, but capitalized expenditures are forecast subsequent to the Test Period.

AEY has complied with the Board's prior direction on the threshold for providing Business Cases and is not prepared to provide additional Business Cases.

(d) Please refer to Schedule 9.2, lines 1 through 131, for a description and breakdown of the total costs incurred and when these costs were incurred. These projects will be added to rate base when they go into service.

(e) The average annual Generation capital expenditures for 2017-2022 is $2,261,511.[5]

(f) Please refer to Schedule 9.2, lines 141 through 171, for a description and breakdown of the total costs incurred and when these costs were incurred. These projects will be added to rate base when they go into service.

(g) The average annual New Extension capital expenditures for 2017-2022 is $4,156,818.[6]

(h) Please refer to Schedule 9.2, lines 181 through 307, for a description and breakdown of the total costs incurred and when these costs were incurred. These projects will be added to rate base when they go into service.

(i) The average annual Distribution Improvement capital expenditures for 2017-2022 is $2,623,224.[7]

[5] 2023-2024 AEY GRA Regulatory Schedules, Schedule 9.2, Line 131, average of 2017 through 2022.
[6] 2023-2024 AEY GRA Regulatory Schedules, Schedule 9.2, Line 171, average of 2017 through 2022.
[7] 2023-2024 AEY GRA Regulatory Schedules, Schedule 9.2, Line 307, average of 2017 through 2022.

(j) Please refer to Schedule 9.2, lines 309 through 336, for a description and breakdown of the total costs incurred and when these costs were incurred. These projects will be added to rate base when they go into service.

(k) The average annual Street and Sentinel Lighting capital expenditures for 2017-2022 is $994,193.[8]

(l) Please refer to Schedule 9.2, lines 338 through 339, for a description and breakdown of the total costs incurred and when these costs were incurred. These projects will be added to rate base when they go into service.

(m) The average annual Meters capital expenditures for 2017-2022 is $81,197.[9]

(n) Please refer to Schedule 9.2, lines 351 through 428, for a description and breakdown of the total costs incurred and when these costs were incurred. These projects will be added to rate base when they go into service.

(o) The average annual General Plant and Equipment capital expenditures for 2017-2022 is $1,611,991.[10]

[8] 2023-2024 AEY GRA Regulatory Schedules, Schedule 9.2, Line 336, average of 2017 through 2022.
[9] 2023-2024 AEY GRA Regulatory Schedules, Schedule 9.2, Line 341, average of 2017 through 2022.
[10] 2023-2024 AEY GRA Regulatory Schedules, Schedule 9.2, Line 428, average of 2017 through 2022.